Enco's New Quick Change Drilling and Tapping Head

Does the Job Better than other Heads Costing 3 times more

Drill AND Tap 1/4" - 3/4" Without Stopping Spindle

TORQUE LIMITER ENDS TAP BREAKAGE

1 END TAP BREAKAGE EVEN IN A BLIND HOLE When tap reaches bottom, the head ratchets and reverses twice as fast as spindle turns. **TORQUE LIMITER AND PLANETARY GEAR DESIGN** (no friction clutch) makes this possible.

2 NEW EXCLUSIVE QUICK CHANGE COLLET DESIGN. Save collet costs. Two collets included, 1/4"-3/8" and 3/8"-3/4". **Cover a range normally requiring several collets.** Cuts down time. Self centering collets have an adjustable double "V" 3 point tool locking. Tools can be centered and changed faster.



Model 52007 Head

$238

For Complete Set in Fitted Hard- wood Case. Including choice of FREE shank*, 2 collets, torque bar, wrenches.

SPECIFICATIONS

Body Diameter	4.175"
Head Hght. (less shank)	5½"
Capacity—tapping in steel tensile Strength – 35 tons per square inch	
	#5/64" to 51/64" dia

QUICK CHANGE COLLETS

Type	Model	Price
1/4"-3/8"*	52101	$21.00
3/8"-3/4"*	52102	21.50
1 M.T.	52103	16.00
2 M.T.	52104	16.50
3 M.T.	52105	17.00

*One each size included with head set.

STANDARD INTERCHANGEABLE SHANKS (One Shank FREE)

Type	Model	Price
2 M.T. Tang	52201	$14.00
2 M.T. Draw Bar	52202	14.00
3 M.T. Tang	52203	15.00
3 M.T. Draw Bar	52204	15.00
4 M.T. Tang	52205	16.00
4 M.T. Draw Bar	52206	16.00
5 M.T. Tang	52207	22.00
R-8	52208	$19.50
9 B&S	52209	19.50
30 Standard	52210	22.00
40 Standard	52211	29.00
50 Standard	52212	37.00
¾" Straight	52213	15.00
1" Straight	52214	17.00

THIS NEW PRECISION HEAVY DUTY head drills and taps instead of tapping only. The built-in torque limiter is very sensitive yet still permits a disengagement at the end of a blind hole, while providing a completely positive cutting action for the tool.

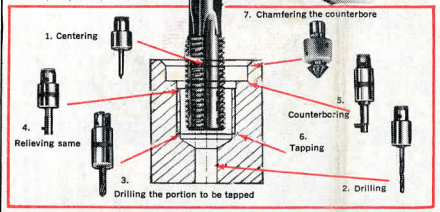
The picture below shows the unlimited number of operations the head can perform without stopping the spindle. For these operations the head works as a quick change drill chuck but with the added benefit of torque limiter safety. This ends most broken drill and tap problems when working in blind holes or thru holes.

3 INTERCHANGEABLE SHANK for use on many machines.

4 TAP RIGHT AND LEFT HAND THREADS.

5 GIVES CAPACITY OF 2 STANDARD HEADS—1/4"-3/4", even in steel.

6 DOES THE WORK OF A MULTI-SPINDLE OR BANK OF DRILL PRESSES without the need for complicated jigs and tooling.



7 ACCURACY TO CLASS 3 THREAD. Rotating parts are mounted on ball and thrust journal races.

DO ALL OPERATIONS WITHOUT STOPPING SPINDLE

TRY ONE Now AT OUR RISK

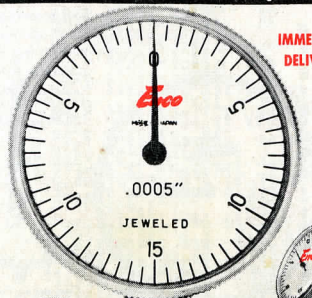
SATISFACTION GUARANTEED OR MONEY BACK

Enco NEW AUTOMATIC REVERSING JEWELED TEST INDICATORS

Priced 30 to 40% Lower than Other Makes!

TRY ONE Now AT OUR RISK..Satisfaction Guaranteed or Money Back!

- ★ Automatic reversing eliminates reversing lever—saves time.
- ★ Ruby-jeweled bearings prevent wear—prolong indicator life—insure repeatability.
- ★ 1.43" diameter wide face for easy reading.
- ★ Positive precision-geared movement.
- ★ Includes 3 hard-chromed interchangeable contact points (.040", .080", .120" diameter).
- ★ Includes 5/32" and 3/8" dovetail posts.
- ★ Durable 1-piece housing with anti-corrosive satin chrome finish.
- ★ Accuracy meets Federal specifications.
- ★ Precision pivot bearings at contact points eliminate friction and insure repeatability. Gives trigger response to lightest pressure.



Enco NEW Exclusive CLAMP* FITS ALL INDICATORS

*Included with Deluxe Test Indicators



STANDARD TEST INDICATOR includes 5/32" and 3/8" diameter posts with dovetail clamp, 3 points (.040", .080", .120" diameter) in fitted case.

Model	Price	Type	Range	Graduation	Reading
699-00	$21.90	HORIZONTAL	.030"	.0005"	0-15-0
699-01	30.80	HORIZONTAL	.008"	.0001"	0-40-0
699-05	25.40	LONG POINT	.030"	.0005"	0-15-0
699-06	22.00	VERTICAL	.030"	.0005"	0-15-0
699-07	30.80	VERTICAL	.008"	.0001"	0-40-0

DELUXE TEST INDICATOR includes 5/32" and 3/8" diameter posts with dovetail clamp, 3 points (.040", .080", .120" diameter), wrench EXCLUSIVE UNIVERSAL CLAMP, surface gage bar 1/4"x ½"x4" and 4" rod 1/4" in diameter—all in fitted case.

Model	Price	Type	Range	Graduation	Reading
699-20	$24.90	HORIZONTAL	.030"	.0005"	0-15-0
699-21	33.80	HORIZONTAL	.008"	.0001"	0-40-0
699-25	28.40	LONG POINT	.030"	.0005"	0-15-0
699-26	25.00	VERTICAL	.030"	.0005"	0-15-0
699-27	33.80	VERTICAL	.008"	.0001"	0-40-0

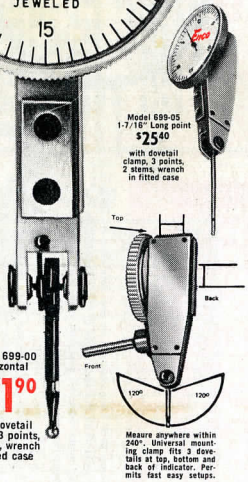
Accessory: Carbide contact points—.080" and .120" . . **$4.50 each**



Model 699-00 Horizontal **$21.90** with dovetail clamp, 3 points, 2 stems, wrench in fitted case



Model 699-06 Vertical **$22.00** with dovetail clamp, 3 points 2 stems, wrench in fitted case



Model 699-05 1-7/16" Long point **$25.40** with dovetail clamp, 3 points, 2 stems, wrench in fitted case

Measure anywhere within 240°. Universal mounting clamp fits 3 dovetails at top, bottom and back of indicator. Permits fast easy setups.

Enco Manufacturing Co.
4520 W. Fullerton Ave.
Chicago, Ill. 60639
Phone 312/227-6200

CATALOG 70C

CONTACT ENCO OR A DEALER FOR CATALOG WITH CURRENT PRICES

ENCO'S NEWEST!
Money-Saving Values
AT SAVINGS FROM 25 TO 40%

TRY ANY of these **NEW** Enco products in your own shop **AT OUR RISK.** See for yourself all the advantages of these dependable, top quality, expertly made tools. All precision tools are guaranteed to meet Federal Specifications for accuracy.

INDICATORS ..... **Pages 1,3,4,5**
Automatic reversing jeweled test indicators featuring Enco's exclusive universal dovetail swivel clamp that fits all indicators, A,G.D. dial indicators and jeweled hand-adjustable dial indicators.

MICROMETERS ..... **Pages 10,11,12,13**
Carbide-tipped in ratchet and friction thimble models, from 0-1" to 12".

CALIPERS ..... **Pages 14,15,16**
Dial and vernier models featuring 4-way measurement and revolution counter dials

QUICK CHANGE DRILLING & TAPPING HEAD ..... **Page 46**
Drills and taps ¼"-¾" without stopping spindle.

Magnetic Chucks, Holders, Vises, Parallels ..... **Pages 17,18,19**
Fine pole ceramic magnetic chucks, magnetic "V" blocks and "V" holders, powerful magnetic vises, parallels for magnetic chucks.

KING SIZE INDICATOR HOLDER ..... **Page 9**
On-off magnetic base indicator holder with 175 lb. magnetic pull and fine adjustment.

TRY ONE *Now* AT OUR RISK

SATISFACTION GUARANTEED OR MONEY BACK

Enco MANUFACTURING CO.

4520 W. Fullerton Ave. Chicago, Ill. 60639 Tel: 312/227-6200

Dear Enco Customer:

"NO COMPROMISE WITH QUALITY" is the guiding principle of Enco since Dad founded it 30 years ago. Dad always says: "Give the Customer
(1) The best product,
(2) Fastest delivery and
(3) Lowest possible price."

Dad, Dan Maximovich, Allan Neuman, Pete Krebs and myself now manage Enco. We are here to serve you in any way we can. Contact any of us any time and we will always try to answer your questions quickly and satisfactorily.

To those of you who have ordered from us in the past, we again say – thank you. If you are not yet using Enco products, we welcome your orders and promise the same dependable service Enco has been giving its customers for the last 30 years. To all of you we hope the tools offered in this catalog can help you make money and increase production.

In short, our feelings are to satisfy you with quality, delivery and price. We believe you get all three with our tools. Why not order the cost-cutting tools you need now at our risk. Satisfaction is guaranteed or your money will be refunded.

Cordially,

Charles Usiskin

Charles Usiskin, Vice-president

ONE YEAR GUARANTEE

Enco products are guaranteed to be free from defects in materials and workmanship for one year from date of purchase. We will replace any part or parts found defective after receipt of the product in our plant. It is the intent of Enco Manufacturing Company that every purchaser of any Enco product be completely satisfied with his purchase.

IN ADDITION, we make the following specific guarantees:
TURRET AND TURRET-QUICK CHANGE TOOL-POST – Re-indexing accuracy to .0005".
3-SIDE AND 4O POSITION QUICK CHANGE TOOLPOST –Repeatability .0001".
TAILSTOCK TURRETS – Shank to hole alignment ± .001.
AUTOMATIC BORING AND FACING HEAD –with .0002" over ¾ travel.
MICROSET ADJUSTABLE CENTERS–Accurate within .006" range to ±.0002".
PRECISION LIVE CENTERS–T.I.R. within .0002".
MAGNETIC BASE TOOLS–Magnetic pull–budget, 50 lbs. single 65 lbs.; Duplex, 125 lbs.; Intermediate, 90 lbs.; ON-OFF, 125 lbs.; King Size, 175 lbs.
PRECISION TOOLS–Guaranteed to meet all Federal specifications for accuracy.

NOTE: A guarantee Certificate is enclosed with each Enco Product.

HANDY INDEX

Boring-facing heads 47, 48
Boring bars 44, 45
Calipers, dial and Vernier ..14 to 16
Centers, live and adjustable ..24 to 26
Drilling-tapping heads 46
Hexturrets 42-43
Indicators ..... 1, 3 to 5
Indicator holders, Magnetic base ..... 6 to 9
Magnetic Chucks 18, 19
Micrometers ..... 10 to 13
Ordering Information 27
Parallels 17
Precision Tools ..... 1, 3 to 5, 10 to 16
Quick change and Quick change turret tool posts and holders ..... 28 to 33
Safety shields and guards ..... 20 to 24
Tailstock turrets 41
Turret Selection Guides 36, 37
Turret tool posts 34, 35, 38 to 40
"V" holders and blocks 17
Vises, magnetic 17

Enco
TRY ONE
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AT OUR RISK

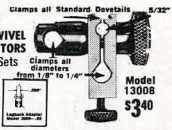
SATISFACTION GUARANTEED OR MONEY BACK

NEW Indicator & Magnetic Base Sets

Save up to $2.70 more than if bought separately!

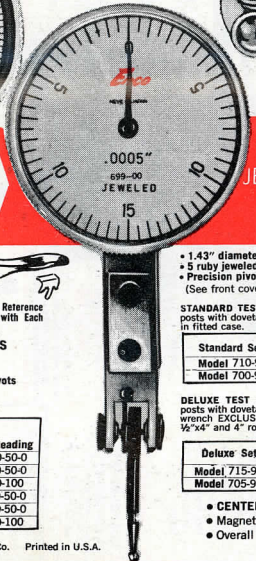
IMMEDIATE DELIVERY

Enco NEW Exclusive
UNIVERSAL DOVETAIL SWIVEL CLAMP—FITS ALL INDICATORS
Included with All Deluxe Sets
- Clamps all standard dovetails
- Clamps all diameters from ⅛" to ¼"





Model 777-00
Dial Indicator and Magnetic Base Set
Model 682-01 indicator with model 300 holder
Both for ONLY
$25.65



Lifting Lever and Reference Markers included with Each Group 2 Indicator.



3-DIAMETER UNIVERSAL ROD with 5/16", 7/32", and ⅜" mounting stems and extra swivel adapter with 5/32" and ¼" mounting stems.



Post mounts 2 ways, vertically and horizontally. Operate from any position.

Automatic Reversing JEWELED TEST INDICATOR AND ON-OFF MAGNETIC BASE INDICATOR HOLDER SETS

Model 700-99 includes TEST INDICATOR model 699-00 AND MAGNETIC BASE INDICATOR HOLDER model 340
$37.95 in box

U.S. Patent No. 3367612

- 1.43" diameter wide face for easy reading
- 5 ruby jeweled bearings prevent wear
- Precision pivot bearings at contact points.

(See front cover for indicator specifications)

RANGE	.30"
GRADUATION	.0005"
READING	0-15-0

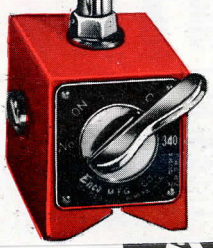
STANDARD TEST INDICATOR includes 5/32" and ⅜" diameter posts with dovetail clamp, 3 points (.040", .080", .120" diameter) in fitted case.

Standard Set	Price	SET INCLUDES Indicator Model	Base Model
Model 710-99	$35.45	699-00	300
Model 700-99	37.95	699-00	340

DELUXE TEST INDICATOR includes 5/32" and ⅜" diameter posts with dovetail clamp, 3 points (.040", .080", .120" diameter), wrench EXCLUSIVE UNIVERSAL CLAMP, surface gage bar ¼"x ½"x4" and 4" rod ¼" in diameter–all in fitted case.

Deluxe Set	Price	SET INCLUDES Indicator Model	Base Model
Model 715-99	$38.45	699-00	300
Model 705-99	40.95	699-00	340

- **CENTERED "V" MAGNET with 125 lb. Pull**
- Magnetic base 1⅞"x2⅜"x2½"
- Overall height 10¼"



A.G.D. GROUP 2 DIAL INDICATORS

- **Graduation .001"**
- **Satin finish chrome plated forged brass body**
- **Hardened stainless steel pinions, spindle and pivots insure long wear and perfect accuracy**

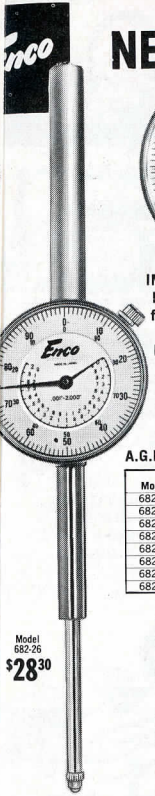
(See Next Page for indicator specifications)

Set Model	Price	SET INCLUDES Base Model	Indicator Model	Range	Reading
777-00	$25.65	300	682-01	.250"	0-50-0
777-10	27.25	300	682-03	.400"	0-50-0
777-20	30.95	300	682-05	1.0	0-100
777-55	28.20	340	682-01	.250	0-50-0
777-65	30.00	340	682-03	.400	0-50-0
777-75	33.70	340	682-05	1.0	0-100

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NEW A·G·D DIAL INDICATORS

···Low Prices Save Up To 40%···

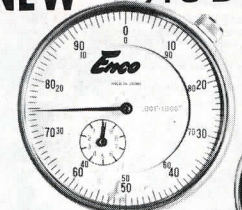


Model 682-26
$28.30

A.D.G. Group 2 Dial Indicator

- 2" Range
- Jeweled Movement
- Easier-to-read Large Revolution Counter at Center

Graduation ..... .001"
Range ..... 2.0"
Reading 0-100
Model 682-26 ... $28.30

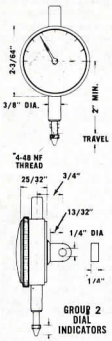


IMMEDIATE DELIVERY from Stock On All Indicators

Model 682-05
$16.60



SHOCKPROOF Model 682-11
$24.35



GROUP 2 DIAL INDICATORS

Lifting Lever and Reference Markers included with Each Group 2 Indicator.

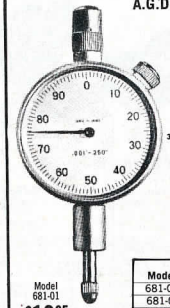
A.G.D. GROUP 2 DIAL INDICATORS

Model	Price	Graduation	Range	Reading	Revolution Counter
682-01	$10.65	.001"	.250"	0-100	WITHOUT
682-02	10.65	.001"	.250"	0-50-0	WITHOUT
682-03	12.65	.001"	.400"	0-100	WITH
682-04	12.65	.001"	.400"	0-50-0	WITH
682-05	16.60	.001"	1.0"	0-100	WITH
682-06	16.60	.001"	1.0"	0-50-0	WITH
682-07	12.65	.0005"	.125"	0-50	WITHOUT
682-08	12.65	.0005"	.125"	0-25-0	WITHOUT

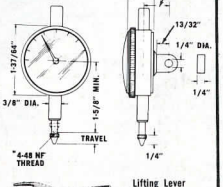
A.G.D. GROUP 2 SHOCKPROOF Graduation .0001"

Model	Price	Range	Reading	Revolution Counter
682-09	$19.50	.025"	0-10	WITHOUT
682-10	19.50	.025"	0-5-0	WITHOUT
682-11	24.35	.050"	0-10	WITH
682-12	24.35	.050"	0-5-0	WITH

A.G.D. Group 1 DIAL INDICATORS



Model 681-01
$10.65



Lifting Lever included with Each Group 1 Indicator.

Model	Price	Graduation	Range	Reading
681-01	$10.65	.001"	.250"	0-100
681-02	10.65	.001"	.250"	0-50-0
681-03	12.65	.0005"	.12	0-50
681-04	12.65	.0005"	.12	0-25-0

TRY ONE Now AT OUR RISK!

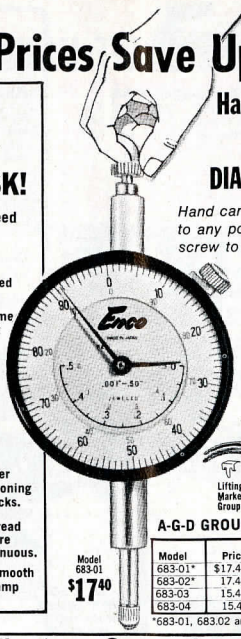
Satisfaction Guaranteed or Money Back

- Stainless steel stem.
- Satin-finish chrome plated forged brass body.
- Hardened, ground, chrome plated tool steel contact point.
- Hardened stainless steel spindle rack, pinions and pivots insure long wear and perfect accuracy.
- Accuracy meets Federal specifications.
- Standard back with center lug has screws for positioning in 90° intervals. Flat backs.
- Dial faces have easy to read black graduations and are either balanced or continuous.
- Knurled bezel permits smooth adjustment. Knurled clamp screw insures setting.

Hand Adjustable JEWELED DIAL INDICATORS

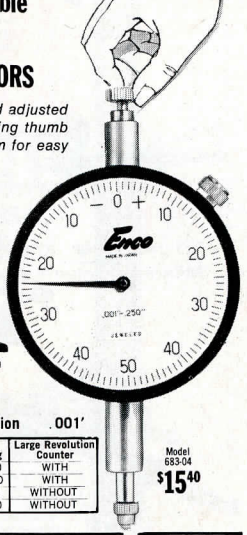
Hand can be moved and adjusted to any position by rotating thumb screw to the top of stem for easy zero setting.

Easier-To-Read Large Revolution Counter at Center on Models 683-01 and 683-02



Model 683-01
$17.40

Lifting Lever and Reference Markers included with Each Group 2 Indicator.



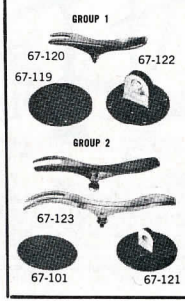
Model 683-04
$15.40

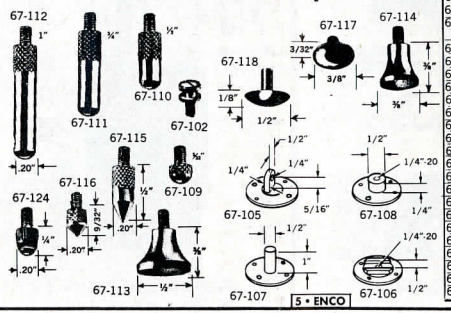
A-G-D GROUP 2 . . . Graduation .001'

Model	Price	Range	Reading	Large Revolution Counter
683-01*	$17.40	.500"	0-100	WITH
683-02*	17.40	.500"	0-50-0	WITH
683-03	15.40	.250"	0-100	WITHOUT
683-04	15.40	.250"	0-50-0	WITHOUT

*683-01, 683.02 are TWO-TONE COLOR

ACCESSORIES for Dial Indicators Group 1 and 2



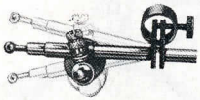


Model	Description	GROUP	Price
67-101	Back, flat	(2)	$1.00
67-102	Screw for Lever	(1 & 2)	.10
67-103	Lever for up to .4" range	(2)	2.50
67-105	Back, Offset	(2)	1.50
67-106	Back, Adjustable	(2)	3.00
67-107	Back, Post	(2)	2.50
67-108	Back, Screw	(2)	2.50
67-109	Point, Length 5/32"	(1 & 2)	.50
67-110	Point, Length 1/2"	(1 & 2)	.50
67-111	Point, Length 3/4"	(1 & 2)	.50
67-112	Point, Length 1"	(1 & 2)	.50
67-113	Point, Flat dia. 1/2"	(1 & 2)	1.00
67-114	Point, Flat dia. 3/8"	(1 & 2)	1.00
67-115	Point, Sharp	(1 & 2)	.50
67-116	Point, Conical	(1 & 2)	.50
67-117	Point, Convex	(1 & 2)	.50
67-118	Point, Convex	(1 & 2)	.50
67-119	Back, Flat	(1)	1.00
67-120	Lever	(1)	2.50
67-121	Back, Lug on center	(2)	1.50
67-122	Back, Lug on center	(1)	1.50
67-123	Lever for 1" range	(2)	2.50
67-124	Point, Standard	(1 & 2)	.50

NEW *Enco* Exclusive ON-OFF MAGNETIC BASE

THREE DIAMETER UNIVERSAL RODS
Fits all indicators with 5/16", 7/32", and 3/8" mounting stems. Extra swivel adaptor for lug back indicators and indicators with 5/32" and 1/4" mounting stems.

POWERFUL 125 LB. PULL
Vibration-free magnetic pull is strong enough for large lug-back indicators.



FINE ADJUSTMENT

GIVES RIGID SENSITIVE CONTROL OF INDICATOR ON ANY PLANE, MAKING DIFFICULT SET-UPS EASY

IMMEDIATE DELIVERY

TRY ONE *Now* AT OUR RISK
Satisfaction guaranteed Or Money Back



MODEL 300 with 7" 3-diameter rod, complete with scriber in wooden box
$16.00

½" split bushing for short stem test indicators included.

Difficult set-up on milling machine shaft made easy with Enco's fine adjustment indicator holder and "V" shaped magnetic base.

Model #300 with lug back indicator zeros in a three-jaw adjustable chuck.

MODEL 340 with 8" 3-diameter fine adjustment rod, complete with scriber in wooden box patented
$18.75
U.S. Patent No. 3367612

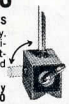
Overall height of indicator holder from base to top of stem is 10¼"

INDICATOR HOLDERS Fit All Indicators

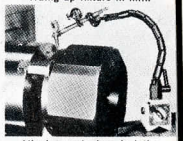
ON-OFF LEVER CONTROL
For easy one hand mounting and unmounting. No risk to polished surfaces.

CENTERED "V" MAGNET
For strongest possible grip on round or flat surfaces. Magnet base: 1⅞" x 2⅜" x 2⅛"

POST MOUNTS 2 WAYS
Vertically or Horizontally. Operates From Any Position. 2 magnetic mounting surfaces—bottom and back.
On-off magnet assembly NO. 3002 .....$11.50




Truing up fixture in mill.


Aligning work-piece in lathe.

FLEXIBILITY

FLEXIBLE STEM INDICATOR HOLDERS Quickly Positions Indicator Even In Hard-To-Reach Locations

- Stem Flexes Almost 360°
- 3-dia., rod provides full 360° adjustment positioning of indicator
- Maximum Rigidity Stable to Better Than .0001", Not Reduced By Constant Use
- Extra Flexibility With 8 Hardened Collars And 9 Hardened Precision-ground Balls
- Locks into Exact Position With A Cam Lever-Operated Cable and Tension Adjustment

Height from bottom of base to top of stem—14¾". Magnet base—1⅞" x 2⅜" x 2⅛" high. Packed in wooden storage box.

Model 355 Complete with FINE ADJUSTMENT 3-dia. 5½" Rod
$28.75
U.S. Patent No. 3367612



FINE ADJUSTMENT Gives Rigid Sensitive Control of Indicator

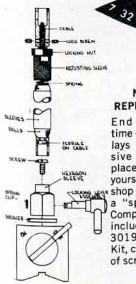
FINE ADJUSTMENT
Gives Rigid Sensitive Control of Indicator



Model 325 Complete with FINE ADJUSTMENT 3-dia. 8" Rod
$12.75
U.S. Patent No. 3367612

Model 320 Complete with 3-dia. 7" Rod
$10.00

STURDY • COMPACT • LOW-PRICED
The round magnetic base is 1½" in diameter, 1⅝" high and has a 50 lb. magnetic pull. The 3-diameter universal rod fits all indicators with 5/16" 7/32" and ⅜" mounting stems.
Model 3025 Extra swivel adaptor for lug back indicators and indicators with ¼" and 5/32" mounting stems. **$2.50**



NEW CABLE REPLACEMENT KIT
End bothersome, time-consuming delays with this exclusive fast cable replacement kit. Do it yourself in your own shop in minutes. Keep a "spare" on hand. Complete instructions included. Order No. 3019, Replacement Kit, complete with set of screws and wrench.
$1.35



$26.00 Patent pending
Model 350 Complete with 3-dia. 5" Rod

Model 3555 12¾" flexible stem only to convert models 340, 300 to flexible stem models. **$17.50**
Model 3506 5" 3-diameter rod. **$1.50**
Model 3550 Fine adjust. 3-dia. 5½" rod. **$5.50**
Model 3025 Extra swivel adaptor for lug back indicators and indicators with ¼" and 5/32" mounting stems. **$2.50**

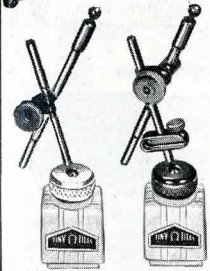
Enco TINY TITAN

MAGNETIC BASE TOOLS . . Guaranteed 65 & 125 lb. Magnetic Pull!

COMPACT . . . STURDY . . . VIBRATION-PROOF . . . EXCLUSIVE FEATURES:

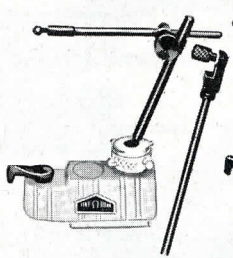
1. Single Universal Rod, exclusive on all Enco indicator Holders, has 3 diameters (5/16", ¼", 1/8") to permit mounting popular indicators without changing rods. Saves time looking for right rod to fit indicator.
2. Swivel Adapter (on Indicator Holders) provides full 360° adjustment.
3. Precision Adjustment Stem (on Nos. 130 and 160) with fine adjustment screw permits extremely fine movement of stem for zeroing indicator dial.
4. Capstan-spoke Adjusting Nut (on Duplex Models) provides quick, positive finger grip for tightening ball joint.
5. Quarter turn of jack-type release lever (on Duplex Models) breaks magnetic pull for easy removal or re-location. Lifting cam retracts flush with bottom, permits full-magnet contact mounting on rounds down to ¾".
6. Ball seat is silver brazed directly to the pole piece for permanent anchorage and lifetime rigidity (not just imbedded in plastic). Ball on stem is spherically machined for full friction area and secure locking of ball joint.
7. Non-magnetic ball seat and spring, prevent magnetism traveling from base to indicator.
8. Non-breakable, high visibility Tenite plastic base.
9. Heavier Magnetic Pull (125 lbs. on Duplex Models, 65 lbs. on smaller models) ensures tight, vibrationproof mounting on flat surfaces and down to ¾" rounds. Permanent Alnico magnets are the strongest made.



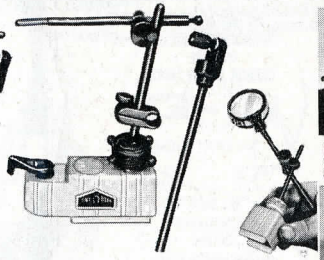


Model 100 Magnetic Base Indicator Holder for smaller indicators such as Starrett, Brown & Sharpe, Gem, Lufkin. Includes 3-Diameter Rod and Swivel Adaptor. **$11.90**

Model 130 Magnetic base indicator holder with precision adjustment for zeroing indicators. Other features same as #100. **$14.00**

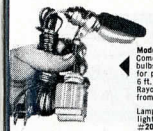


Model 150 Heavy duty magnetic base indicator holder for indicators up to 3" diameter. Includes 3-Diameter Universal Rod, offset clamp for lug-back indicators and swivel adaptor. **$21.20**



Model 160 Heavy duty magnetic indicator holder with precision adjustment for zeroing indicators. (featured in the above illustration). Other features are the same as the #150. **$23.50**

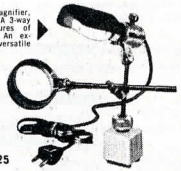
Model 120 Combination magnifier and indicator holder. Fitted with 5X magnifier, non distorting at 2" focal distance. Other features same as #100. **$18.90**



Model 200 Magnetic base handilite. Comes with 2 non-glare 25 watt bulbs. Gives pin-point lighting. Ideal for pantographs and close die work. 6 ft. oil resistant U.L. approved cord. Rayon flocked shade protects user from burns. **$12.50**

Lamp bulbs for #270 and #220 lights.
#2013 25 watt non-glare (packed 4 to a carton) **$2.25**

Model 220 Combination magnifier, light and indicator holder. A 3-way tool combining the features of #100, #120 and #200. An extremely economical and versatile unit. **$24.90**



Model 250 Heavy duty magnetic base lighting unit. Takes standard bulbs up to 100 watt. Spoke adjusting nut, heavy duty flexible arm and 125 pound magnetic pull permit easy adjustment and vibration proof setting. Ideal for use on punch presses, milling machines, etc., and as a portable light for repair or maintenance work. Flocked shield protects user against burns. 8 ft. oil, resistant, U.L. approved cord, rubber plug. **$24.00**





Model 3002 "ON-OFF" 125 lb. pull magnet assembly with two mounting surfaces, bottom and back. **$11.50**

Model 155 Hardened and ground steel surface plate shoe. Mount the shoe on the base of Model 150 or 160 and use as a surface gage on steel, marble, or glass surface plates. **$3.65**



Model 4001 Complete 80 lb. pull magnetic base assembly (without shield) for use with concave or flat shields. **$10.75**

Model 4002 Magnet only. **$7.00**



Model 125 5X magnifier non-distorting 2" focal length. Use with all Enco 100, 130, 150, 160, 300. Also can be used with surface gage to inspect small parts, read Vernier scale, etc. **$7.00**



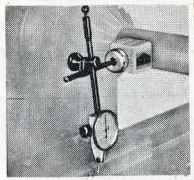
Model 1002 used on Models 100, 120, 130, 200, 220. Yellow unbreakable Tenite plastic 1¼" x 1⅞" x 1½" high. **$7.00**



Model 1502 Heavy duty magnet assembly used on Models 150, 160, 250. Green unbreakable Tenite plastic 1¼" x 4" x 1⅝" high. **$11.50**

IMMEDIATE DELIVERY ON ALL MAGNETIC BASE TOOLS

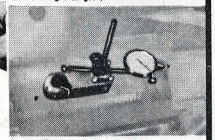
ENCO • 8



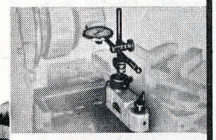
Model #100 mounted on cutter arbor used to align milling fixture in milling machine. Ease of mounting on round as well as flat surfaces makes these tools indispensable.



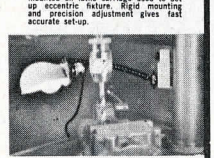
Model #220 Combination Magnifier and Light is made to order for tool, die and mold work. Photo shows ball end mill being honed to gage with diamond hone, using 5X magnification and light to get precise contour.



Model #150 with indicator mounted used as a precision lathe stop to give repetitive shoulder length.



Model #160 with precision adjustment mounted on lathe carriage used to set up eccentric fixture. Rigid mounting and precision adjustment gives fast accurate set-up.



Model #250 Portable Magnetic Base Light can be quickly attached to any machine or fixture to provide pin-point lighting where needed.

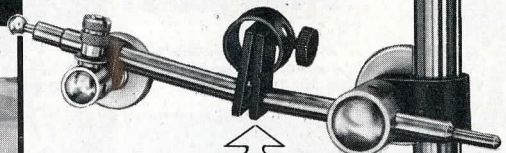
Enco New KING SIZE

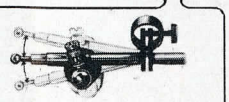
175 LB. PULL

On-Off Magnetic Base INDICATOR HOLDERS

FIT ALL INDICATORS

15½" TALL





FINE ADJUSTMENT

GIVES RIGID SENSITIVE CONTROL OF INDICATOR ON ANY PLANE, MAKING DIFFICULT SET-UPS EASY



Model 360 with 8" 3-diameter fine adjustment rod complete in wooden box **$34.75**

THREE DIAMETER UNIVERSAL ROD
Fits all indicators with 5/16", 7/32", and 3/8" mounting stems. Extra swivel adaptor for lug back indicators and indicators with 5/32" and 1/4" mounting stems.

ON-OFF LEVER CONTROL
For easy one hand mounting and unmounting. No risk to polished surfaces.

CENTERED "V" MAGNET
For strongest possible grip on round or flat surfaces. Extra large magnet base: 3-3/16"x2-3/4"x2-13/16".

TRY ONE Now AT OUR RISK
Satisfaction guaranteed Or Money Back

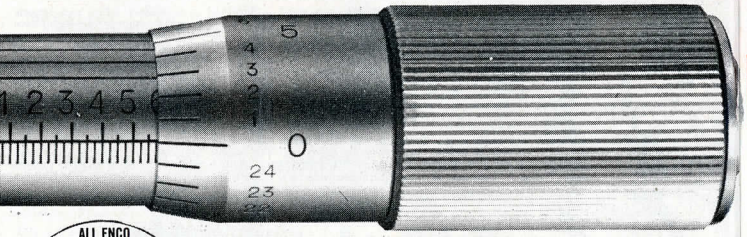
Enco

NEW 1" and 2" CARBIDE-TIPPED MICROMETERS

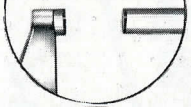


PRICED 20% TO 40% LOWER THAN OTHER MAKES

- Satin Finish Forged Steel Frame with Decimal Equivalents



ALL ENCO MICROMETERS FEATURE CARBIDE TIPPED FACES



ALL ENCO MICROMETERS FEATURE Positive Locking Lever



- Flatness .00003"
- Parallelism .00005 for 0-1"
- Accuracy .0001"
- Every thousandth is numbered for easy reading
- Diameter of the measuring faces .250"
- Crisp clear graduations
- Quick and easy wear-adjustment
- Positive locking clamp
- Spanner wrench with each micrometer
- Precision-ground and hardened anvil and spindle thread—micro-lap finish on ends
- Carbide tipped faces
- Tapered frame makes it easy to use in hard-to-reach places

FRICTION THIMBLE FOR FAST ONE HAND OPERATION



Model 601-01 0-1" Range **$13.35** in fitted case

Model	Price	Range	Graduation
601-01	$13.35	0-1"	.001"
601-11	14.95	0-1"	.0001"
Standard included with 1-2" micrometers			
601-02	14.75	1-2"	.001"
601-12	16.95	1-2"	.0001"

- Deluxe fitted case included with each micrometer

DELUXE HEAT INSULATED FRAME PROTECTS ACCURACY

Friction thimble with speeder for fast exact repetitive readings



Model 603-01 .0001" Graduation 0-1" Range **$22.75** in Fitted Case

Model 603-02 WITH STANDARD .0001" Graduation 1-2" Range **$25.00** in Fitted Case

- **Ideal for use in areas subject to extreme temperature variations**
- **Satin finish forged steel frame with decimal equivalents**

Model 600-01 Range 0-1" Graduation .0001" **$17.75** In Fitted Case

Immediate Delivery on All Micrometers

SATISFACTION GUARANTEED OR MONEY BACK

TRY ONE Now at Our Risk!

ALL MICROMETERS WITH .0001" GRADUATION

Model	Price	Range	Type
600-01	$17.75	0-1"	Friction
600-11	17.75	0-1"	Ratchet
Standard included with 1-2" micrometers			
600-02	20.75	1-2"	Friction
600-12	20.75	1-2"	Ratchet

Fitted case included with each micrometer.

Enco 1" TO 12" CARBIDE-TIPPED Mmicrometers AND SETS

TRY ONE Now AT OUR RISK Satisfaction Guaranteed or Money Back!

SAVE 25 to 40% OVER OTHER MAKES

NEW



Model 602-00
0-1" Range
$13.35

NEW

ALL ENCO MICROMETERS FEATURE CARBIDE TIPPED FACES

ALL ENCO MICROMETERS FEATURE Positive Locking Lever



DELUXE FITTED CASE With each Enco Micrometer

IMMEDIATE DELIVERY on all micrometers and micrometer sets

All micrometers meet Federal Specifications for Accuracy!

Enco RATCHET-STOP MICROMETERS

MODEL	PRICE	RANGE	GRADUATION
602-00	$13.35	0-1"	.001"
602-01	14.95	0-1"	.0001"
Standards Included with All Micrometers Below.			
602-02	16.95	1-2"	.0001"
602-03	19.75	2-3"	.0001"
602-04	21.75	3-4"	.0001"
602-05	23.25	4-5"	.0001"
602-06	25.25	5-6"	.0001"
602-07	27.75	6-7"	.0001"
602-08	29.75	7-8"	.0001"
602-09	31.25	8-9"	.0001"
602-10	33.00	9-10"	.0001"
602-11	34.50	10-11"	.0001"
602-12	36.35	11-12"	.0001"

- Accuracy from .0001" for 0-1".
- Parallelism from .00005" for 0-1".
- Every thousandth is numbered for easy reading.
- Diameter of measuring faces: .250".
- Flatness from .00003" for 0-1".
- Enameled frame.
- Spanner wrench with each micrometer.
- Hardened and precision ground anvil and spindle thread–with micro-lap finish on ends.
- Carbide faces.
- Ratchet Stop for exact and repetitive readings.
- Tapered frame makes it easy to use in hard-to-reach areas.
- Crisp, clear graduations.
- Quick and easy wear-adjustment.
- Positive locking clamp.

NEW



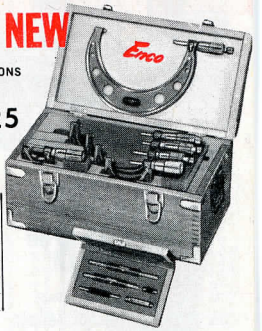
Model 604-03
3-micrometer Set Covering 0-3" Range
.0001" GRADUATIONS
Complete
$56

Set includes

Model	Range
601-11	0-1"
601-12	1"-2"
602-03	2"-3"

Model 604-06
6-micrometer Set Covering 0-6" Range
.0001" GRADUATIONS
Complete
$123.25

NEW



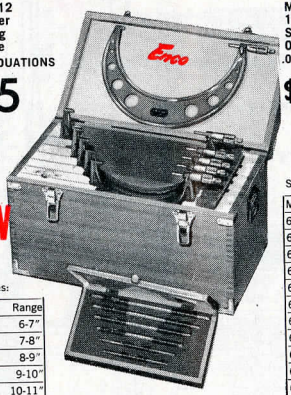
Set includes:

Model	Range
601-11	0-1"
601-12	1-2"
602-03	2-3"
602-04	3-4"
602-05	4-5"
602-06	5-6"

Each Enco micrometer set comes in Deluxe fitted wood case and includes standards for 2" and larger Friction Thimble on 0-1" and 1-2" micrometers. All larger sizes with ratchet stops

Model 604-12
6-micrometer Set Covering 6-12" Range
.0001" GRADUATIONS
$195
Complete

NEW



Set includes:

Model	Range
602-07	6-7"
602-08	7-8"
602-09	8-9"
602-10	9-10"
602-11	10-11"
602-12	11-12"

Model 604-00
12-micrometer Set Covering 0-12" Range
.0001" GRADUATIONS
$310
Complete

Set includes:

Model	Range
601-11	0-1"
601-12	1-2"
602-03	2-3"
602-04	3-4"
602-05	4-5"
602-06	5-6"
602-07	6-7"
602-08	7-8"
602-09	8-9"
602-10	9-10"
602-11	10-11"
602-12	11-12"

NEW



Enco NEW Dial Calipers

A LASTING VALUE PRICED 10% TO 30% LOWER THAN OTHER MAKES

COVERED RACK PROTECTS AGAINST DIRT AND CHIPS!



Model 661-04
4"-Dial Caliper
$18.50

Model 661-06
6"-Dial Caliper
$31.00

FAST DELIVERY FROM STOCK

TRY ONE Now AT OUR RISK
SATISFACTION GUARANTEED OR MONEY BACK

- ★ Stainless steel with hardened, precision ground and micro-lapped measuring faces for absolute accuracy
- ★ Satin chrome finish scale surface with clear, black, sharply engraved graduations in inches and millimeters
- ★ Easy-to-read large clear dial reads accurately to .001" with adjustment for setting
- ★ Raised sliding surface eliminates wear and marring of graduations.
- ★ Clamp for repetitive settings
- ★ Nickel chrome plated brass rack gives longer life

Each Enco Dial Caliper Packed in a deluxe velvet lined metal case

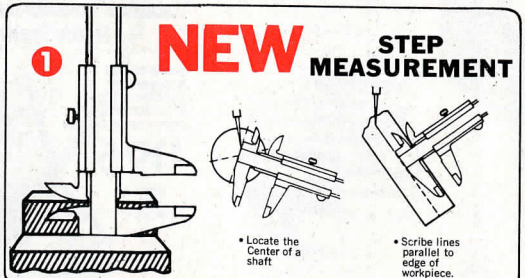
Model	Price	Range	Measuring Capacity	Graduations	Fine Adj.	Thumb Roll	Counter
661-04	$18.50	4"	4"	.001"		YES	
660-06	33.50	6"	5"	.001"	YES		
661-06	31.00	6"	6"	.001"		YES	
661-16	34.00	6"	6"	.001"		YES	YES
661-08	41.00	8"	8"	.001"		YES	
661-12	63.50	12"	12"	.001"		YES	

4 WAY Measurement

SPEED UP LAYOUT WORK WITH ENCO 4-WAY DIAL CALIPERS

This one instrument can replace several separate tools usually required for layout work.

1 NEW STEP MEASUREMENT



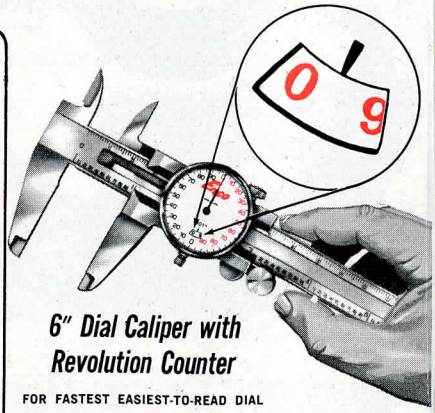
- Locate the Center of a shaft
- Scribe lines parallel to edge of workpiece.

2 INSIDE MEASUREMENT

3 DEPTH MEASUREMENT

4 OUTSIDE MEASUREMENT





6" Dial Caliper with Revolution Counter

FOR FASTEST EASIEST-TO-READ DIAL

ENCO MODEL 661-16

$34.00

- Counter records each .100" to 1.0", then starts again at zero
- Color-coded dial and counter helps prevent reading errors

HOW COLOR-CODED DIAL MAKES READING EASIER

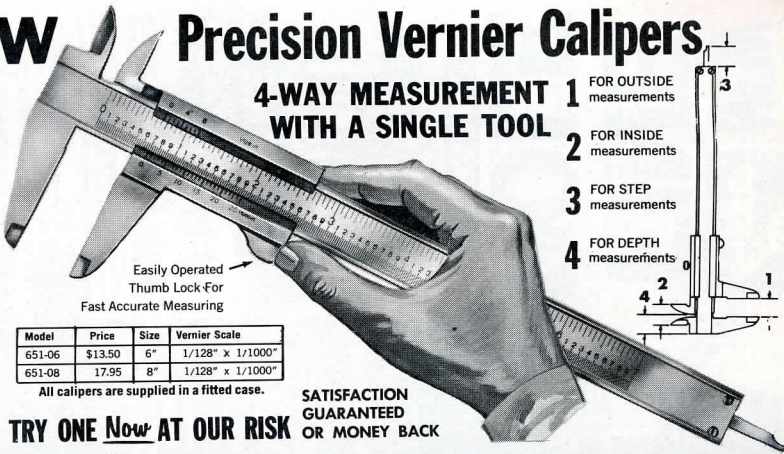
Dial range is 200, reading 0-100-100. Revolution counter records each .100" up to 1.0". When dial pointer is in red-numbered half of the dial, numbers in counter window show in red. When pointer is in black half, numbers in counter window show in black. To determine measure, simply add counter figures (measured in .10") to the dial figures shown by pointer (measured in .001") as long as both are the same color.



Enco NEW Precision Vernier Calipers

VALUE PRICED TO SAVE UP TO 40%

- Hardened stainless steel throughout for longer life and greater accuracy.
- Photo engraved from a glass master plate.
- Satin chromed finish.
- Substantial measuring bars to avoid deflection.
- Raised sliding surfaces prevent marring and wear of graduations; clear black engravings.
- All measuring surfaces are ground and lapped for extreme accuracy.



4-WAY MEASUREMENT WITH A SINGLE TOOL

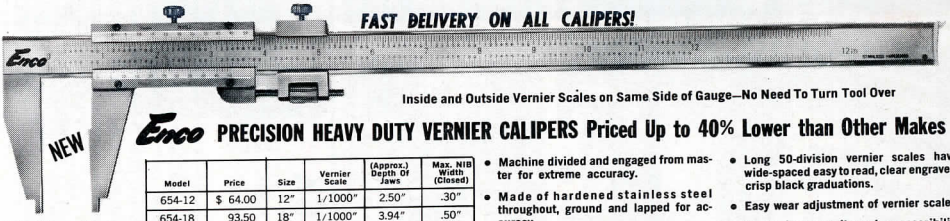
1 FOR OUTSIDE measurements
2 FOR INSIDE measurements
3 FOR STEP measurements
4 FOR DEPTH measurements

Model	Price	Size	Vernier Scale
651-06	$13.50	6"	1/128" x 1/1000"
651-08	17.95	8"	1/128" x 1/1000"

All calipers are supplied in a fitted case.

TRY ONE Now AT OUR RISK SATISFACTION GUARANTEED OR MONEY BACK

FAST DELIVERY ON ALL CALIPERS!



Inside and Outside Vernier Scales on Same Side of Gauge—No Need To Turn Tool Over

Enco PRECISION HEAVY DUTY VERNIER CALIPERS Priced Up to 40% Lower than Other Makes

Model	Price	Size	Vernier Scale	(Approx.) Depth Of Jaws	Max. NIB Width (Closed)
654-12	$ 64.00	12"	1/1000"	2.50"	.30"
654-18	93.50	18"	1/1000"	3.94"	.50"
654-24	121.00	24"	1/1000"	3.94"	.50"
654-40	223.00	40"	1/1000"	5.50"	1.00"

Each Caliper Supplied in Deluxe Wood Case

- Machine divided and engaged from master for extreme accuracy.
- Made of hardened stainless steel throughout, ground and lapped for accuracy.
- Satin chrome finish.
- Raised sliding surface prevents marring and wear of graduations.
- Long 50-division vernier scales have wide-spaced easy to read, clear engraved, crisp black graduations.
- Easy wear adjustment of vernier scales.
- Longer jaws permit greater accessibility and simpler measurement of larger workpieces.

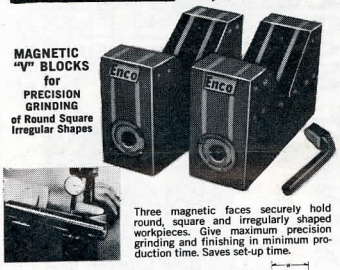
All Calipers Meet Federal Specifications For Accuracy

ENCO • 16

Enco MAGNETIC

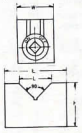
V-BLOCKS, HOLDERS, VISES . . . For Precision Grinding Value Priced to SAVE UP TO 40% Over Other Makes

MAGNETIC "V" BLOCKS for PRECISION GRINDING of Round Square Irregular Shapes



Three magnetic faces securely hold round, square and irregularly shaped workpieces. Give maximum precision grinding and finishing in minimum production time. Saves set-up time.

Model	Price	SIZES H	W	L	L
53001	$39.00	1.57"	1.89"	2.68"	1.42"
53003	54.00	2.91"	1.77"	4.33"	2.36"
53002	75.00	3.94"	1.97"	5.90"	3.54"



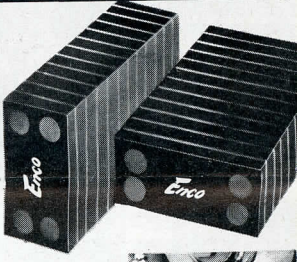
MAGNETIC "V" HOLDER for Precision Finishing of Round and Irregular Shapes

Model 11005
$42.00

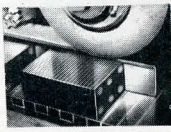


Strong Magnetic Pull on 3 Surfaces . . . "V" Shape, Bottom and Back

Practical precision-finish holder—highly useful in scribing off round bars, grinding, cutting and finishing operations.

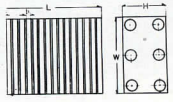


Chuck Block PARALLELS For use with Magnetic Chucks



Precision-ground laminated steel and copper parallel blocks simplify set-ups in grinding operations and avoid need for complicated holding devices. Provide maximum magnetic transfer from magnetic chucks without magnetic absorption. Quality, uniformity and strength guaranteed. Pairs are matched and come in moisture-proof box.

Model	Price	SIZE H	W	L	PITCH a	b
54001	$16.50	.87"	1.77"	2.83"	.06."	1.25"
54002	33.00	1.61"	2.76"	3.94"	.06"	.125"



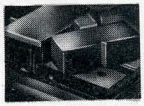
MAGNETIC VISE

GRIND 2 or 3 SIDES OF PARALLEL SQUARE WITH ONE SETTING

- No thrust screw — Eliminates distortion
- Accurate grinding of work square with minimum set-up time
- Finish ground surfaces controlled to 0.0002" flatness and 0.0001" per square inch squareness



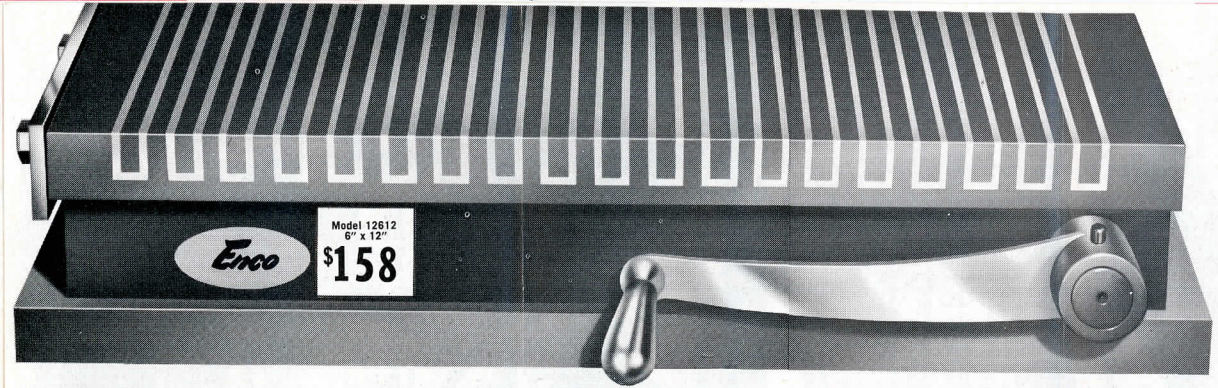
Model 11001
$70.00 packed in wooden box



Loose jaw gives additional packing for irregular shapes



Grinding 3rd or 4th side of parallel block with one setting



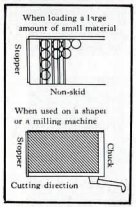
Enco NEW FINE POLE CERAMIC MAGNETIC CHUCKS

30 to 40% Lower than Other Makes

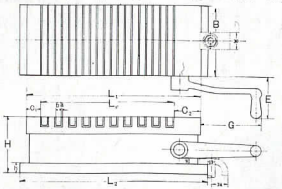
- Powerful Ceramic Magnets Provide 3 Times the Pull of Ordinary Magnets
- Individually Magnetized Poles Assure Uniform Holding Power
- Full Loading Power Over Entire Top Plate—No Dead Spots
- Solid Top and Bottom Plates Assure Retained Accuracy
- Low Height for Greater Clearance

IMMEDIATE DELIVERY
TRY ONE Now AT OUR RISK
Satisfaction Guaranteed or Money Back

Fine Magnetic Pole Pattern for quality grinding of thin or small workpieces

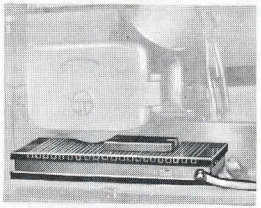


Close pole spacing of steel poles 9/32" wide with non steel separators 1/16" wide.



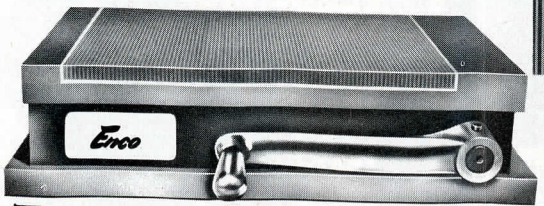
Model	BxL1	Working Surface L2	a	b	C1	C2	Chuck Mounting L2	h	Height H	Handle E	G
12047	4"x7"	5.08"	.06"	.28"	.71"	1.10"	7.68"	.47"	2.52"	3.42"	2.60"
12510	5"x10"	7.76"	.06"	.28"	.81"	1.28"	10.63"	.55"	2.60"	4.02"	2.76"
12612	6"x12"	9.09"	.06"	.28"	1.28"	1.44"	12.60"	.59"	2.87"	5.20"	2.83"
12618	6"x18"	15.12"	.06"	.28"	1.16"	1.44"	18.50"	.63"	2.91"	7.95"	2.83"
12824	8"x24"	19.80"	.06"	.28"	1.26"	2.56"	24.41"	.71"	2.99"	7.48"	2.83"

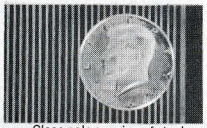
MODEL	SIZE	PRICE
12047	4" x 7"	78.00
12510	5" x 10"	108.00
12612	6" x 12"	158.00
12618	6" x 18"	210.00
12824	8" x 24"	395.00



MICROPITCH PERMANENT MAGNETIC CHUCK

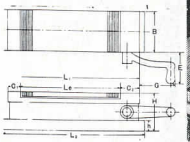
- Maximum Holding Power for Tiniest Workpieces
- Fine Finish Grinding of Material as Thin as .01"

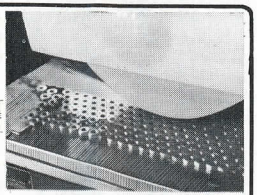




Close pole spacing of steel poles 3/64" wide with non steel separators 1/32" wide.

MODEL	SIZE	PRICE
13510	5" x 10"	$139.00
13612	6" x 12"	219.00
13618	6" x 18"	275.00





Each major pole in top plate is individually magnetized to assure uniform holding power

Model	BxL	Working Surface L	Pitch	C1	C2	Chuck Mounting Section L2	h	Height H	Handle E	G
13510	5"x10"	7.72"	.03"x.05"	.75"	1.38"	10.63"	.55"	2.68"	4.02"	2.76"
13612	6"x12"	8.78"	.03"x.05"	1.20"	1.83"	12.60"	.67"	2.91"	5.20"	2.83"
13618	6"x18"	14.80"	.03"x.05"	1.08"	1.81"	18.50"	.63"	2.91"	7.95"	2.83"

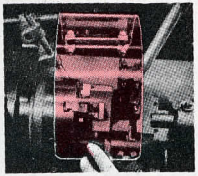
Precision Grinding of Small Workpieces

Enco

CURVED WRAP-A-ROUND SAFETY SHIELDS

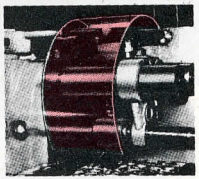
For Lathes, Milling Machines And Other Machine Tools





Model 420 or 421 shield mounts easily in T-slot on top or front of table using one bolt. Shield works as a transparent door on milling machine.

LIFTS EASILY OUT OF WAY



Extension mounting to adapt shield to almost any machine

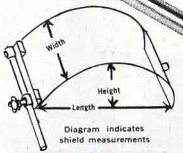


Diagram indicates shield measurements

Greatest Protection Against Hot Chips—Splashing Coolants

SATISFACTION GUARANTEED OR MONEY BACK!

IMMEDIATE DELIVERY

TRY ONE Now AT OUR RISK

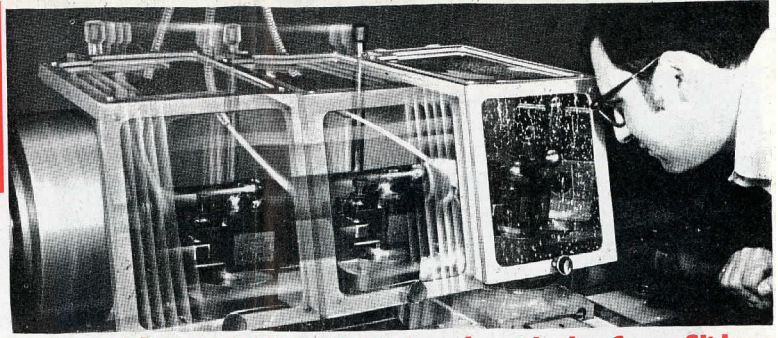
Curved Shields Complete with Hardware

Model No.	Suggested Lathe Size	Shield Width	Shield Length	Shield Height	Price
420	6" to 12"	6"	12½"	7"	$27.00
421	12" to 15"	7½"	16¼"	7¼"	36.00
422	15" and up	9¾"	20"	9¾"	46.00
4301	Extension Mounting Fits All Sizes				4.00

Curved Replacement Shields Only

Model No.	Shield Width	Shield Length	Shield Height	Carton of 1	Carton of 3	Carton of 6
4201	6"	12½"	7"	$11.00	$30.00	$55.00
4212	7½"	16¼"	7¼"	17.00	47.00	85.00
4223	9¾"	20"	9¾"	25.00	67.00	122.00

- Prevents accidents—Lost man hours • Maximum protection to eyes, face and forearms from flying chips and splashing coolants • Reduces housekeeping • Provides greater coolant recovery • Permits close examination of work without danger
- Easily attached with 5/16" bolt for permanent mounting to lathe, milling machine or other machine tool
- Built-in stop can be set to any position
- Full 360° positioning for best location on engine lathe headstock or carriage to follow work in process
- Clear 3/16" acrylic plastic



New Enco TRAVEL GUARD Travels with the Cross Slide

PROTECTS OPERATOR WHEREVER TOOL IS CUTTING



- Heavy Duty Aluminum Frame
- Built-in Stop Makes Positioning Easy
- Mounts Easily on Cross Slide
- Guard can be positioned vertically or horizontally without interfering with operator or work piece

TRY ONE AT OUR RISK

SATISFACTION GUARANTEED OR MONEY BACK

ENCO HEAVY DUTY TRAVEL GUARD

MODEL NO.	Suggested Lathe Size	LOCATION	WIDTH	LENGTH	H.	V.	PRICE EACH
428	9" to 15"	TOP SIDE	8¼" 8¼"	11" 9"	14"	16"	$40.00
429	15" and up	TOP SIDE	10¼" 10¼"	14" 13⅜"	18"	20"	$50.00

ENCO REPLACEMENT SHIELDS 5/32" THICK

MODEL NO.	LOCATION	CARTON OF 1	CARTON OF 3	CARTON OF 6
4280	TOP	$3.50	$ 8.95	$16.40
4281	SIDE	3.25	8.65	15.75
4290	TOP	5.85	15.50	28.00
4291	SIDE	5.85	15.50	28.00

PLAY IT SAFE! WHY TAKE CHANCES?

Flying chips and splashing coolants are obvious inherent dangers to machine operators. Courts now assume an implied machinery warranty that reasonable safe-guard against inherent dangers must be provided to machine operators. Proof of negligence is not always needed. Why take chances? Use Enco safety shields and be safe.



Shield Lifts Quickly and Easily Out of the Way for checking workpiece or adjusting tools

Heavy Duty Aluminum Frame Chuck Guard

- Shield is attached to lathe with rigid mounting bracket using two ⅜" bolts
- Shield can be mounted on top or side of lathe headstock



- Built-in Stop Makes Positioning Easy

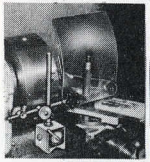
ENCO HEAVY DUTY CHUCK GUARDS—COMPLETE

MODEL NO.	Suggested Lathe Size	LOCATION	WIDTH	LENGTH	PRICE EACH
426	9" to 15"	TOP SIDE	8¼" 8¼"	11" 9"	$38.00
427	15" and up	TOP SIDE	10¼" 10¼"	14" 13⅜"	$48.00

ENCO REPLACEMENT SHIELDS ONLY—5/32" THICK

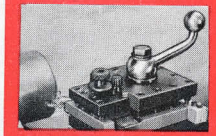
MODEL NO.	LOCATION	CARTON OF 1	CARTON OF 3	CARTON OF 6
4264	TOP	$3.50	$ 8.95	$16.40
4265	SIDE	3.25	8.65	15.75
4276	TOP	5.85	15.50	28.00
4277	SIDE	5.85	15.50	28.00

Enco MAGNETIC BASE *SAFETY SHIELDS*..... MAXIMUM PROTECTION AGAINST CHIP BURNS



Overall height of indicator holder from base to top of stem is 10¼"

Post Mounts Two Ways. Vertically or Horizontally. Operates From Any Position.



YOU SEE THIS OR A BLIND MAN SEES THIS



TRY ONE AND SEE!

- Prevents accidents—Lost man hours
- Maximum protection to eyes, face and forearms from flying chips and splashing coolants
- Reduces housekeeping
- Provides greater coolant recovery
- Permits close examination of work without danger

NEW CONCAVE SHIELDS

DEFLECTS CHIPS AND COOLANTS **DOWN**

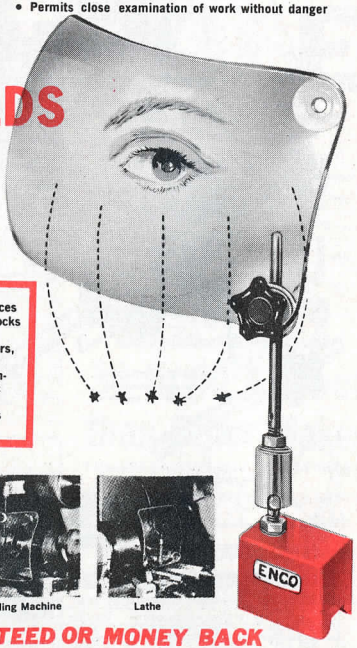
For Maximum Eye Protection!

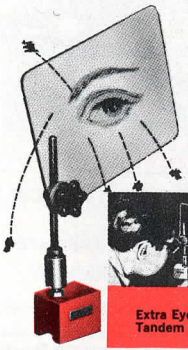
IMMEDIATE DELIVERY

Chips fall away from base with flip of on-off switch giving operator more protection.

Use Either as Safety Shield or as Indicator Holder

- Unbreakable Plastic Shields—⅛" Thick
- Choice of 10 Interchangeable Concave or Flat Safety Shields





- 80-lb. magnetic pull... grips flat or round surfaces
- Shield swivels 360°... locks securely in place
- Fits lathes, mills, grinders, shapers, etc.
- Made of crystal clear, unbreakable acrylic plastic ⅛" thick
- Concave and flat shields interchangeable



Extra Eye Protection with Tandem Installation

Milling Machine

Lathe

COMBINATION INDICATOR HOLDER-SAFETY SHIELD

THREE DIAMETER UNIVERSAL RODS
Fits all indicators with 5/16", 7/32", and 3/8" mounting stems. Extra swivel adaptor for lug back indicators and indicators with 5/32" and 1/4" mounting stems.

POWERFUL 100 LB. PULL
Vibration-free magnetic pull is strong enough for large lug-back indicators.

ON-OFF LEVER CONTROL
For easy one hand mounting and unmounting. No risk to polished surfaces.

CENTERED "V" MAGNET
For strongest possible grip on round or flat surfaces. Magnet base: 1⅞x2⅜x2½.

Magnetic Base Indicator Holder with Concave Shield

Model No.	Shield Size	Price
306	6"x8"	$21.45
307	8"x10"	22.50
308	10"x12"	24.50
309	12"x16"	26.75
310	16"x20"	30.45

Concave Replacement Shields

Model No.	Size	Carton of 3	Carton of 6
46	6"x8"	$11.50	$20.90
47	8"x10"	15.25	27.55
48	10"x12"	21.25	38.55
49	12"x16"	28.20	51.30
50	16"x20"	39.75	72.30

Magnetic Base Indicator Holder with Flat Shield

Model No.	Shield Size	Price
301	6"x8"	$19.45
302	8"x10"	20.15
303	10"x12"	21.10
304	12"x16"	22.50
305	16"x20"	25.10

Flat Replacement Shields

Model No.	Size	Carton of 3	Carton of 6
41	6"x8"	$ 4.95	$ 8.90
42	8"x10"	7.45	13.45
43	10"x12"	9.95	18.15
44	12"x16"	13.95	25.80
45	16"x20"	21.75	40.20

Try Our One At Now Risk

SATISFACTION GUARANTEED OR MONEY BACK

Flat Shield with Base

Model No.	Size	Price
401	6"x8"	$11.95
402	8"x10"	12.65
403	10"x12"	13.60
404	12"x16"	15.00
405	16"x20"	17.60

Flat Replacement Shields

Model No.	Size	Carton of 3	Carton of 6
41	6"x8"	$ 4.95	$ 8.90
42	8"x10"	7.45	13.45
43	10"x12"	9.95	18.15
44	12"x16"	13.95	25.80
45	16"x20"	21.75	40.20

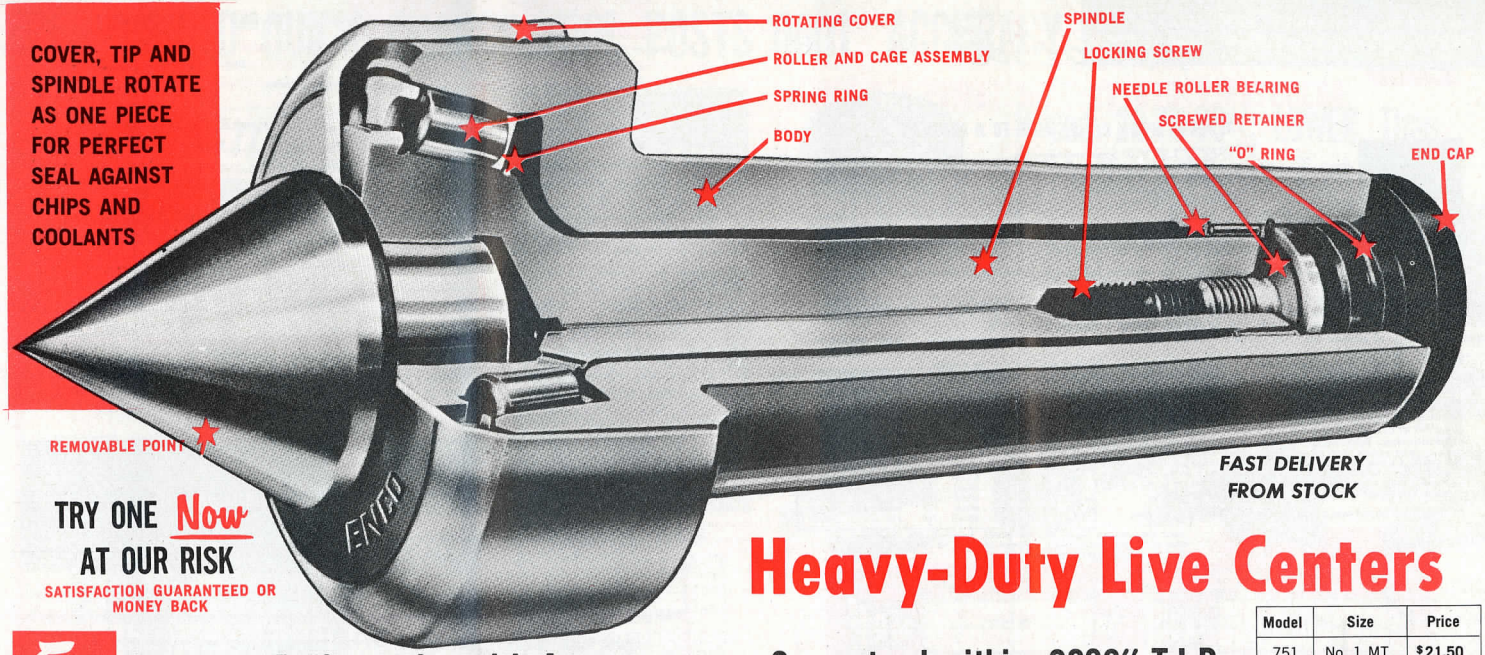
Concave Shield with Base

Model No.	Shield Size	Price
406	6"x8"	$13.95
407	8"x10"	15.00
408	10"x12"	17.00
409	12"x16"	19.25
410	16"x20"	22.95

Concave Replacement Shields

Model No.	Size	Carton of 3	Carton of 6
46	6"x8"	$11.50	$20.90
47	8"x10"	15.25	27.55
48	10"x12"	21.25	38.55
49	12"x16"	28.20	51.30
50	16"x20"	39.75	72.30

COVER, TIP AND SPINDLE ROTATE AS ONE PIECE FOR PERFECT SEAL AGAINST CHIPS AND COOLANTS



FAST DELIVERY FROM STOCK

TRY ONE *Now* AT OUR RISK

SATISFACTION GUARANTEED OR MONEY BACK

Heavy-Duty Live Centers

Enco Precision Engineered — with Accuracy — Guaranteed within .0002" T.I.R.

The front and rear bearing tracks are ground direct on the spindle and body. The spindle is precision ground between centers. This insures perfect concentricity and alignment of the front and rear bearing track and of the roller retaining rib. The cage is made of a light alloy casting, entirely machined. Replaceable point is ground on its own bearing to eliminate any possibility of eccentricity. Center adjusts automatically for thrust and load. The forged, hardened steel body and spindle and all points of stress are hardened to 60-62 Rockwell for maximum rigidity. Rotating cover makes set-ups easier as operator can see both point and cover turn instead of only the point. Maintenance reduced 1) because of simplified design using a minimum number of parts, 2) replaceable point, and 3) grease for over a year under normal operation.

	RADIAL LOAD IN LBS.								
	REVS/MIN.								
SIZE	25	50	100	250	500	1000	2000	3000	4000
No. 1 M.T.	—	370	300	230	180	150	120	110	100
No. 2 M.T.	—	740	600	460	370	300	240	220	200
No. 3 M.T.	1360	1100	900	690	560	450	360	330	300
No. 4 M.T.	2280	1850	1500	1150	920	750	600	550	500
No. 5 M.T.	5310	4320	3500	2680	2160	1750	1400	1280	—
No. 6 M.T.	12140	9870	8000	6140	4940	4000	3200	—	—
No. 7 M.T.	15720	16040	13000	9970	8020	6500	—	—	—
1" S.S.	1360	1100	900	690	560	450	360	330	300
1½" S.S.	2280	1850	1500	1150	920	750	600	550	500

Load and speed capacities have been very conservatively established to incorporate a wide safety factor and extended bearing life.

Priced 35 to 40% Lower Than Most Centers

Compact Roller Bearing Design with Minimum Overhang Gives Extreme Precision and Rigidity for Superior Performance Under Difficult Machining Conditions.

Model	Size	Price
751	No. 1 MT	$21.50
752	No. 2 MT	23.50
753	No. 3 MT	26.00
754	No. 4 MT	32.00
755	No. 5 MT	42.00
756	No. 6 MT	95.00
757	No. 7 MT	255.00
758	1" S.S.	28.50
759	1½" S.S.	35.00

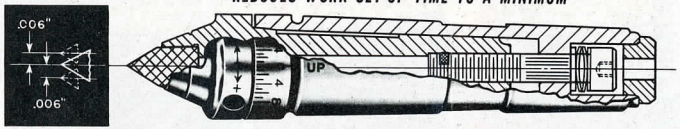
Special center and special points available. Send specifications for quotation.

Enco

Micro-Set®

ADJUSTABLE CENTER...for Lathes & Grinders

REDUCES WORK SET-UP TIME TO A MINIMUM



ENCO MICRO-SET ADJUSTABLE CENTERS ARE GUARANTEED FOR 1 YEAR

TRUE alignment from tailstock to headstock on NEW or WORN cylindrical grinders, gear shavers, lathes and tracer attachments.

Quick, ACCURATE correction from tenths to .012" on straight or taper work. • Ends hit or miss table or tailstock adjustments.

Aligns work on centers in increments of .0005" on diameter of work. • Replaceable carbide tip.

On dead spindle grinders, the center can be used in the headstock along with a half center in the tailstock for small work requiring wheel clearance.

• Any operator gets precise alignment easily in seconds. • Quickly pays for itself in time and scrap savings.

Trueing work between centers for straight or taper work on lathes and grinders is a fast easy job with the ENCO MICRO-SET Adjustable Center. Total tip movement in either direction is .006" which results in .012" correction on the diameter of the work. Calibrations on the sleeve indicate correction on diameter of work.

CONSTRUCTION—The Micro-Set Adjustable Center is ruggedly built. Chips, dirt or coolant cannot enter or affect the internal mechanism. The sleeve and arbor are precision ground and lapped to each other and held in metal-to-metal contact to a holding and releasing taper by a shake-proof screw and spring. This prevents movement of the tip once it is set in the desired position. The Center is fitted with a replaceable carbide tip.

TO ORDER AN ADJUSTABLE CENTER Specify taper size required.

MORSE TAPER

Model	Size:	
702	#2	$49.50
703	#3	61.50
704	#4	76.00

JARNO TAPER

Model	Size:	
716	#6	$53.00
717	#7	53.00
718	#8	65.00
719	#9	65.00
720	#10	85.00
721	#11	85.00
722	#12	85.00

BROWN & SHARPE TAPER

Model	Size:	
706	#6	$53.00
707	#7	53.00
708	#8	65.00
709	#9	65.00
710	#10	85.00
711	#11	85.00

STRAIGHT SHANK

Model	Size:	
725	¾"	$56.00
726	1"	68.00
727	1¼"	80.00
728	1½"	80.00

HOW IT WORKS:

Sleeve and arbor are equally eccentric ground. Assembled, they complement each other at "0" and produce lateral movement of the tip in increments of .0005" or .001" on diameter, when rotated each side of "0."

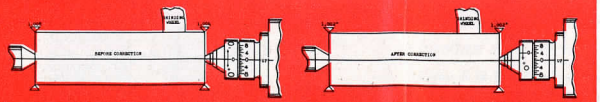
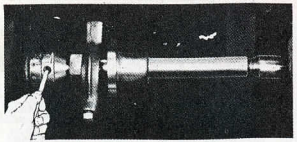


Fig. 1 shows arbor and sleeve zeroed with each other and a .004" taper on the diameter workpiece or .002" center misalignment.

Fig. 2 shows correction made by turning "0" on the arbor to 4 on the **minus** side (or away from operator) which has moved the tip **toward** the operator .002" and centered the workpiece.



ADJUSTABLE CENTER IN HEADSTOCK OF DEAD SPINDLE GRINDER with half center in tailstock for small work requiring wheel clearance. The zero of the Adjustable Center is in a vertical position to provide lateral movement of the tip and the workpiece. This lateral movement permits the operator to quickly correct a taper (within tenths) if the shaft is to be ground straight or tapered.



ADDITIONAL APPLICATIONS

Helical milling cutters may be precisely re-ground parallel by using Adjustable Center mounted in the headstock.

Taper reamers can be re-ground using the Micro-Set Adjustable Center. Since the tip movement is calibrated in .0005", movement between graduations allows operator to work to .0001" or .0002".

Adjustable Center used in tailstock of gear shaving machine. Pinion length with respect to distance between centers gives additional numerical calibrations.

Enco ORDER BLANK

(May be filled out and attached to purchase order if desired)

FAST DELIVERY ON ALL ORDERS

TRY ONE Now AT OUR RISK

SATISFACTION GUARANTEED OR MONEY BACK

Date:_____

Please enter our Order #_____ for the Enco Products indicated below.

FIRM_____

ORDERED BY_____ (Signature) TITLE_____

BILLING ADDRESS_____ CITY_____ STATE_____ ZIP_____

SHIPPING ADDRESS_____ CITY_____ STATE_____ ZIP_____

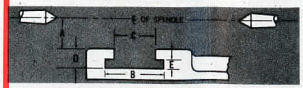
NAME OF YOUR DISTRIBUTOR_____

ADDRESS OF YOUR DISTRIBUTOR_____

Quantity	Model	Description	Price	Total

TURRET QUICK CHANGE, QUICK-CHANGE TURRET TOOL POST DIMENSION CHARTS FOR LATHES

- Standard and Heavy Duty T-Slot (Pages 34-35)
- Quick Change T-Slot (Pages 28, 29, 32, 33)
- Cam Locking (Page 40)
- Quick-Change Turret T-Slot (Pages 30-31)
- Compound Replacement (Page 39)
- Cross-Slide Hexagon (Page 40)



Make of Lathe and Size	A	B	C	D	E	Maximum Tool or Toolholder Size To Be Used



Make of Lathe and Size	S	T	U	V	W	X	Y	Z	No. of Bolts	Maximum Tool or Toolholder Size To Be Used

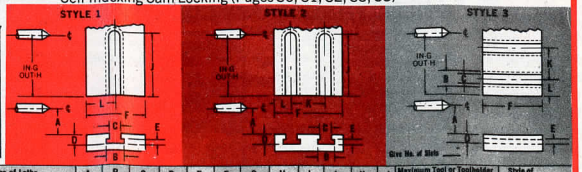
CHART NO. 3

CROSS SLIDE TOOLPOST DIMENSION CHART FOR TURRET LATHES AND SCREW MACHINES

Screw Handle and Self Indexing Cam Locking (Page 38)

Self Indexing Cam Locking (Pages 30, 31, 32, 33, 38)

Select style at right which corresponds to the front of your cross-slide and fill in dimensions completely. If other than styles shown submit equivalent information. When ordering turrets for use with toolholders specify whether for H.S.S. or Carbide Bits.



Make and Size of Lathe	A	B	C	D	E	F	G	H	I	J	K	L	Maximum Tool or Toolholder Size To Be Used	Style of Cross-slide

NOTE: When ordering Enco Turrets machined to the dimensions of your lathe, please give all dimensions and data

WHEN ORDERING MACHINABLE BASE T-SLOT TURRETS or TAILSTOCK TURRETS, indicate Model and/or Taper Size.

All Prices are F.O.B. our Plant in Chicago. Prices subject to change without notice.

Enco 3-SIDED QUICK CHANGE TOOL POSTS .0001" ACCURACY

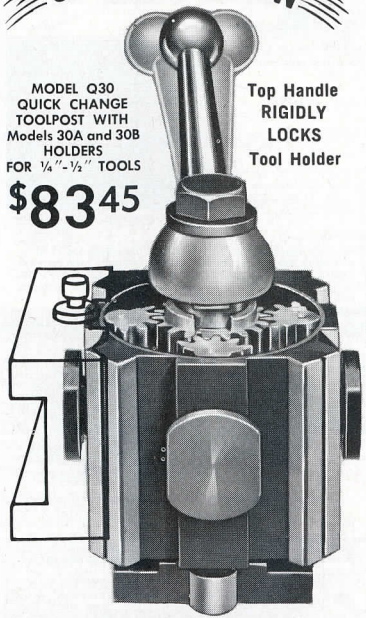
Gets Tool Closer To Headstock and Tailstock With Maximum Tool Clearance and Minimum Overhang

QUICK ACTION

MODEL Q30 QUICK CHANGE TOOLPOST WITH Models 30A and 30B HOLDERS FOR ¼"-½" TOOLS

$83.45

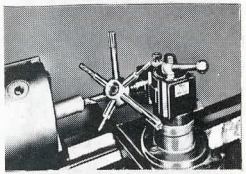
Top Handle RIGIDLY LOCKS Tool Holder



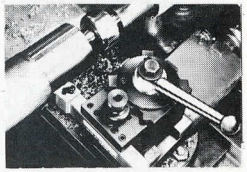
Exclusive locking pin holds toolpost and T-nut rigidly to prevent sliding under heavy cut

Using power feed with Enco tailstock turret. (holds up to 6 tools) Order C holder and tailstock turret.

(see page 41)



Facing with tool holder on headstock side of toolpost

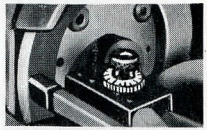


.0001" Accuracy Guaranteed MADE IN USA

Priced 20 TO 30% LOWER Than Other Quick Change Tool Posts

AMERICA'S LOWEST PRICE

Maximum Rigidity with 3-sided Versatility



Sharpening tools without removing them from the holder.

TRY ONE Now AT OUR RISK.

Satisfaction Guaranteed or Money Back

Immediate Delivery from Stock

ENCO QUICK CHANGE T-SLOT 3-SIDE TOOL POST with 3 pairs of hardened and ground "V" ways						
Toolpost with set of 6 holders—2 A holders, 1 ea. B.C.D.E. holders		Toolpost Only		Lathe Swing	Square	Thick
Model No.	Price	Model No.	Price			
Q430*	$119.85	Q30	$ 55.00	6" to 12"	2½"	2"
Q635	188.65	Q35	72.00	9" to 15"	2¾"	2½"
Q645	253.85	Q45	101.00	13" to 19"	3½"	3"
Q660	356.50	Q60	142.00	14" to 24"	5"	3¾"

Fitted T-Nut and Cap Screw Included FREE

*Q430 set includes 4 holders: one each of models 30A, B, C, E.



GIVE MAXIMUM TOOL SIZE TO BE USED

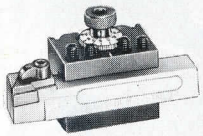
HOW TO ORDER QUICK CHANGE TOOL POSTS AND HOLDERS

Select correct tool post by recommended lathe swing. (See selection guide by make of lathe, page 36). Supply dimension information indicated on T-slot dimension chart above or fill in chart 1 on order form page 27.

To order quick-change tool holders, order model numbers 45A, 45B, 45C, 45D, 45E to fit tool post model Q45. Tool holder models 30A, 30B, 30C, 30D, 30E fit tool post model Q30. Similarly with all other models—the 35 series tool holders fit the 35 series tool posts and the 60 series tool holders fit the 60 series tool posts.

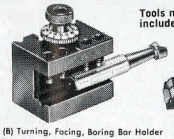
ENCO MICRO-SET "FINGER-TIP" CONTROL QUICK CHANGE HARDENED AND GROUND TOOL HOLDERS

Tools not included



(A) Turning and Facing Tool Holders

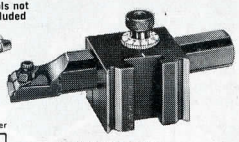
Model No.	Price	Tool Capacity
30A	$13.95	¼" to ½"
35A	15.50	⅜" to ¾"
45A	21.60	½" to 1"
60A	30.50	½" to 1¼"



(B) Turning, Facing, Boring Bar Holder

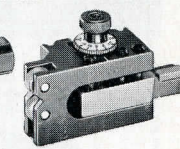
Model No.	Price	Tool Capacity
30B	$14.50	Boring bars shanks to ⅞" diam. Tools—¼" to ½"
35B	16.15	Boring bars shanks to ⅞" diam. Tools—⅜" to ¾"
45B	22.70	Boring bars shanks to ¾" diam. Tools—½" to 1"
60B	31.50	Boring bars shanks to 1" diam. Tools—½" to 1"

Same facing and turning tool sizes as "A" holders



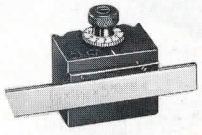
(C) Heavy Duty Drilling, Boring Bar Holders

Model No.	Price	Tool Capacity
30C	$19.00	Up to ¾" diam. (Use drill chuck with ¾" arbor)
35C	22.70	Up to 1" diam. (Use No. 1 or 2 M. T.)
45C	27.75	Up to 1¼" diam. (Use No. 1, 2, or 3 M. T.)
60C	43.00	Up to 1½" diam. (Use No. 1, 2, 3, or 4 M. T.)



(D) Combination Knurling, Facing Tool Holders Includes One Set of Knurls

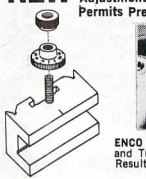
Model No.	Price	Tool Capacity
30D	$24.20	Knurls—⅝" diam. 5/16" wide, ⅛" axle
35D	26.80	Knurls—⅝" diam. 5/16" wide, ⅛" axle
45D	32.00	Knurls—¾" diam. ⅜" wide, ¼" axle
60D	41.00	Knurls—¾" diam. ⅜" wide, ¼" axle

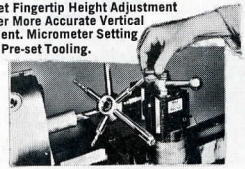


(E) Cut-Off or Parting Tool Holders (Use Type "B" or "T" ASA Blades)

Model No.	Price	Tool Capacity
30E	$17.40	⅛" by ½" to ⅛"
35E	19.60	1/16" by ⅛" to 3/16"
45E	27.20	1/16" by ⅛" to ¼"
60E	38.00	1" by ⅛" to ¼"

NEW Micro-Set Fingertip Height Adjustment for Faster More Accurate Vertical Adjustment. Micrometer Setting Permits Pre-set Tooling.



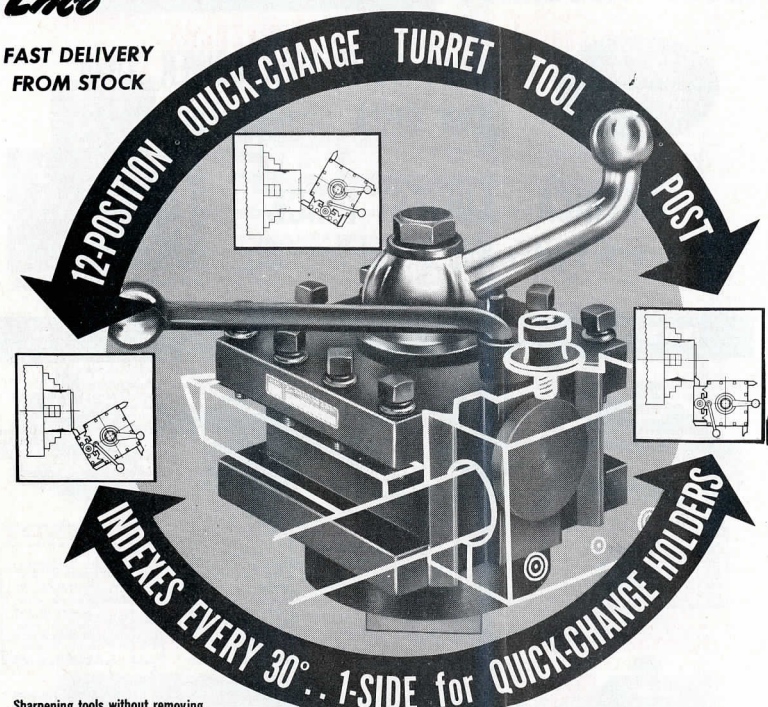


Enco Tool Holders Have 1/8" to ¼" MORE CAPACITY Than Other Holders AT LESS COST

ENCO TOOL HOLDERS ARE INTERCHANGEABLE between Quick Change and Turret Quick Change Toolposts — Ends Tool Holder Duplication — Results: Save 50% and More of Tool Holder Cost.

Enco Quick-change Turret COMBINES 12-POSITION INDEXING TURRET with ONE SIDE for QUICK-CHANGE TOOL HOLDERS

FAST DELIVERY FROM STOCK



Sharpening tools without removing them from the holder.



1. RE-INDEXING ACCURACY GUARANTEED WITHIN .0005", Even When Indexing Turret and Quick Change Tool Holder
2. Indexing Every 30° for All Tools including Quick Change Tool Holders (see photo)
3. Maximum Rigidity for Chatter-Free Performance
4. Pre-Set Tooling for Periodic Runs without disturbing basic set-up.
5. Production Speed of 3 Basic Tools in Turret, and Unlimited Quick Change Tool Capacity for Extra Operations such as Boring, Knurling, Cut-Off, Threading, Drilling and Facing (see photos)

TRY ONE Now AT OUR RISK...Satisfaction Guaranteed or Money Back!

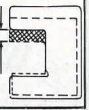
UNLIMITED TOOL CAPACITY

With one face of this 12-position tool post serving as a quick change tool post, each quick change tool holder as well as the three other tools mounted into the turret tool post can be indexed every 30° to three working positions. This makes it practical for 12-position turret-quick change tool posts to become standard equipment on lathes for model shop work, production, tool room, experimental maintenance and other special jobs without constantly changing turrets or quick change tool posts.

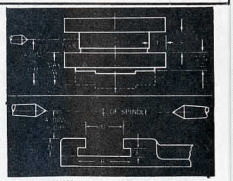


Micro-Set Fingertip Height Adjustment for Faster, More Accurate Vertical Adjustment. Micrometer Setting. Ends Need for Shims.

Enco Tool Holders Have 1/8" to 1/4" MORE CAPACITY Than Other Holders AT LESS COST



INTERCHANGEABLE TOOL HOLDERS All Enco quick change tool holders fit both quick change turret posts and 3-side quick change tool posts. Ends tool holder duplication—Saves 50% and more in tool holder cost.



GIVE MAXIMUM TOOL SIZE TO BE USED

ENCO T-SLOT QUICK CHANGE TURRET TOOL POSTS

Tool Post with set of A, B, C, D, E Holders		Tool Posts Only		"A" Dimension (Center Hgt.) Range	Lathe Swing	Tool Capacity	TOOL BLOCK DIMENSIONS				
Model No.	Price	Model No.	Price				Square	Thick	S	T	Min "W"
530	$177.05	30	$ 88.00	5/8" to 1 1/8"	6" to 13"	1/4" to 1/2"	3"	1 1/2"	1/2"	7/16"	1/2"
535	210.75	35	110.00	1 1/16" to 1 13/16"	10" to 15"	1/2" to 3/4"	3 1/2"	2 1/4"	21/32"	15/16"	3/4"
545	277.25	45	146.00	1 1/16" to 2 7/16"	13" to 19"	3/4" to 1"	4 1/2"	2 7/8"	1 15/32"	1 23/32"	1 1/16"
560 *	446.00	60 *	262.00	1 13/16" - 2 11/16"	14" - 24"	1" to 1 1/4"	6"	3 1/4"	1 7/16"	1 61/64"	1 51/64"

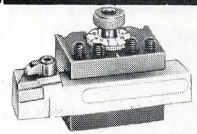
* Supplied with forged tool block

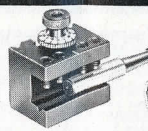
HOW TO ORDER QUICK CHANGE TURRET TOOL POSTS AND HOLDERS

Select correct tool post by recommended lathe swing. See selection guide by make of lathe on page 36. Supply dimension information indicated on T-slot chart above, at right. Popular sizes with machineable base are carried in stock for fast delivery. They can be machined to fit your lathe at no extra cost.

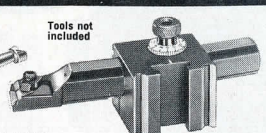
To order quick change tool holders, order models 45A, 45B, 45C, 45D, 45E to fit tool post model. Similarly with all other models—the 35 series tool holders fit 35 series tool posts, the 30 series tool holders fit 35 series tool posts and thte 60 series tool holders fit the 60 series tool posts.

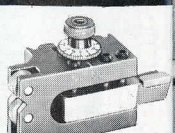
ENCO MICRO-SET "FINGER-TIP" CONTROL QUICK CHANGE HARDENED AND GROUND TOOL HOLDERS





Tools not included





(A) Turning and Facing Tool Holders

Model No.	Price	Tool Capacity
30A	$13.95	1/4" to 1/2"
35A	15.50	3/8" to 3/4"
45A	21.60	1/2" to 1"
60A	30.50	1/2" to 1 1/4"

(B) Turning, Facing, Boring Bar Holder

Model No.	Price	Tool Capacity
30B	$14.50	Boring bars shanks to 5/16" diam. Tools—1/4" to 1/2"
35B	16.15	Boring bars shanks to 3/8" diam. Tools—3/8" to 3/4"
45B	22.70	Boring bars shanks to 3/4" diam. Tools—1/2" to 1"
60B	31.50	Boring bars shanks to 1" diam. Tools—1/2" to 1"

Same facing and turning tool sizes as "A" holders



(C) Heavy Duty Drilling, Boring Bar Holders

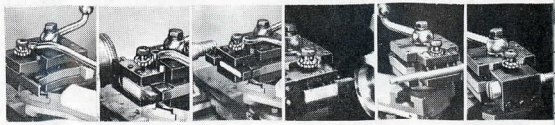
Model No.	Price	Tool Capacity
30C	$19.00	Up to 3/4" diam. (Use drill chuck with 3/4" arbor)
35C	22.70	Up to 1" diam. (Use No. 1 or 2 M. T.)
45C	27.75	Up to 1 1/4" diam. (Use No. 1, 2, or 3 M. T.)
60C	43.00	Up to 1 1/2" diam. (Use No. 1, 2, 3, or 4 M. T.)

(D) Combination Knurling, Facing Tool Holders Includes One Set of Knurls

Model No.	Price	Tool Capacity
30D	$24.20	Knurls—5/8" diam. 3/16" wide, 1/32" axle.
35D	26.80	Knurls—4/5" diam. 5/16" wide, 1/32" axle
45D	32.00	Knurls—3/4" diam. 3/8" wide, 1/4" axle
60D	41.00	Knurls—3/4" diam. 3/8" wide, 1/4" axle

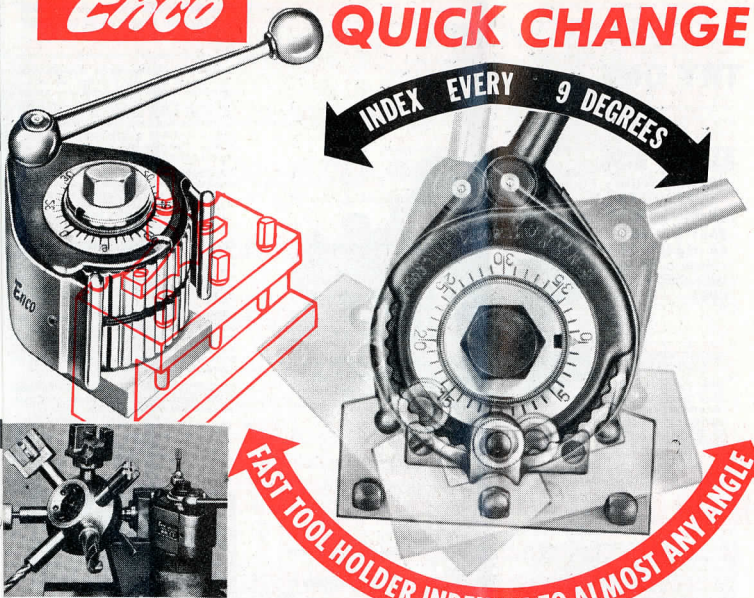
(E) Cut-Off or Parting Tool Holders (Use Type "B" or "T" ASA Blades)

Model No.	Price	Tool Capacity
30E	$17.40	1/2" by 1/16" to 1/8"
35E	19.60	1/16" by 1/16" to 3/16"
45E	27.20	3/16" by 1/16" to 1/8"
60E	38.00	1" by 1/16" to 1/4"



CUT-OFF KNURLING THREADING FACING BORING DRILLING

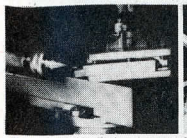
NEW 40 POSITION .0001" Precision Heavy Duty QUICK CHANGE TOOLPOST & HOLDERS



Toolpost with Enco tailstock turret uses power feed of cross slide for more accurate work and better finish. Holds 6 tools for as little as $45.00. See page 14 for tailstock turrets.

Maximum rigidity results when toolpost pulls toolholder securely against hardened and ground interlocking splines like a "Bear Hug"

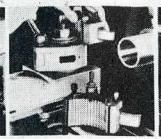
- Forged steel band with cam-locking top handle rigidly locks and quickly releases tool holder.
- Toolpost and tool holders made of precision-machined high quality forged chrome steel, thru-hardened to 60 Rockwell.
- Greater capacity built into every tool holder, even for lathes with low center height.
- Ideal for multiple-operation jobs in tool room and for tracer work.
- 40-position dial (every 9) with marker, permits easy quick change of same or different tool holder to 40 different angles or positions.
- Turning, boring, drilling, cut-off, chamfering and threading tools mount easily in tool holders.
- **INCLUDED FREE:** Fitted T-nut, cap screw and fitted riser with tongue key toolpost into T-slot for better mounting; helps to prevent sliding even under heavy cut.



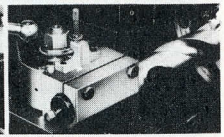
Finger-tip height adjustment screw and lock quickly sets tool – ends needs for shims. Permits pre-set tooling.



Cutter works obliquely in one of 40 possible positions. Machining workpiece requiring multiple operations without resetting.



Tools can be re-ground without removing them from the tool holders or changing their position.



Drilling with automatic feed, using boring bar holder with Morse taper bushing. Same holder can also bore by removing M.T. sleeve.

Try one Now at Our Risk

SATISFACTION GUARANTEED

. . . OR MONEY BACK

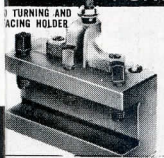
IMMEDIATE DELIVERY

HOW TO ORDER: Select correct toolpost by recommended lathe swing. Select desired quick change tool holders from same category. Example: All E3-H or E3-G holders go with E 3 toolpost. Order by sets as 6E-3 or toolpost and required holders. Check selection guide by make of lathe or center height on page 37 and fill in dimension chart on page 27.

ENCO T SLOT QUICK CHANGE TOOL POSTS FOR BENCH OR ENGINE LATHES

Tool Post with Set of 6 Holders including 3G Holders 1 Each—H,J,T Holders		Tool Post Only		Lathe Swing	U	V
Model	Price	Model	Price			
6E-1	$168.00	E-1	$52.00	Under 9"	1¾"	2¾"
6E-2	248.00	E-2	95.00	9"-13"	1¼"	3¼"
6E-3	382.00	E-3	139.00	13"-20"	2¼"	5⅝"
6E-4	590.00	E-4	196.00	18"-30"	3¼"	7⅞"
5E-5*	1055.00	E-5	430.00	25"-Up	5½"	9¼"

FORGED, PRECISION-MACHINED QUICK CHANGE TOOL HOLDERS WITH THRU HARDENED AND GROUND SPLINES



(G) TURNING AND FACING HOLDER

E1-G ¼"-½" tool $18.75
E2-G ⅜"-⅝" tool 23.00
E3-G ⅛"-1¼" tool.. 37.00
E4-G ⅝"-1⅜" tool .. 59.00
E5-G 1"-2" tool 110.00



(H) BORING HOLDER

E1-H ⅛"-½" dia. ...$18.75
E2-H ⅜"-¾" dia. 24.00
E3-H ¾"-1¼" dia. .. 41.00
E4-H 1¼"-1⅞" dia.. 64.00
E5-H 1½"-2⅝" dia. 145.00



(J) HEAVY DUTY DRILLING AND BORING

E1-J ½" dia. $20.00
E2-J 1⅜" dia. 29.00
E3-J 1¾" dia. 43.00
E4-J 1⅞" dia. 66.00
E5-J 2½" dia. 150.00



(L) M.T. BUSHING FOR "J"

E2L1 1 M.T. $7.50
E2L2 2 M.T. 7.50
E3L3 3 M.T. 9.00
E3L4 4 M.T. 9.75
E4L3 3 M.T. 11.00
E4L4 4 M.T. 13.00
E5L4 4 M.T. 13.00



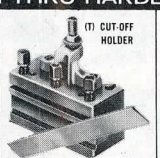
(M) BORING BAR FOR "J"

E3M 1¾"x19½"x" $16.00
E4M 1⅞"x27⅝". 32.00



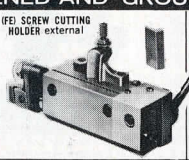
(P) H.S.S. TOOL BIT HOLDER

E1-P ¼" tool $21.75
E2-P ⅜" tool 28.00
E3-P ½" tool 45.00
E4-P ⅝" tool 59.00



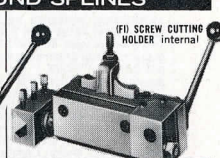
(T) CUT-OFF HOLDER

E1T holder $21.00
E1TB blade ⅝"x⅜" 7.00
E2T holder 31.00
E1TB blade ⅞"x⅜" 7.00
E3T holder 48.00
E3TB blade ⅛"x⅝" 9.00
E4T holder 87.00
E4TB blade ⅞"x1 ..... 11.00



(FE) SCREW CUTTING HOLDER external

HOLDER	BLADE (60°)
E2FE	E2FEBS High Speed Steel $7.00
$79.00	E2FEBC Tungsten Carbide 12.50
E3FE	E3FEBS High Speed Steel 9.00
88.00	E3FEBC Tungsten Carbide 14.50
E4FE	E4FEBS High Speed Steel 9.00
120.00	E4FEBC Tungsten Carbide 14.50



(FI) SCREW CUTTING HOLDER internal

E2F1 ½" tool $80.00
E3F1 ¾" tool 103.00
E4F1 ¾" tool 140.00

12-POSITION T-SLOT . . . . TURRET TOOL POSTS

GUARANTEED . . . . . ACCURACY WITHIN .0005"



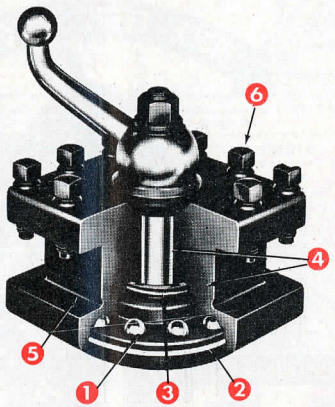
TRY ONE Now AT OUR RISK

SATISFACTION GUARANTEED OR MONEY BACK

FAST DELIVERY on models machined to fit your lathe at NO EXTRA COST

LATHE BUILDERS RECOGNITION

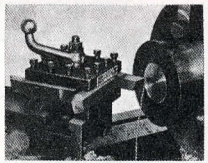
After stringent tests Enco turrets are now recommended as standard accessories by all leading lathe builders.



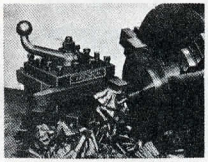
EXCLUSIVE *Enco* FEATURES

Convert A Lathe into an Efficient Production Machine at LOWEST COST

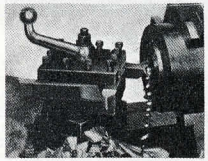
1. **ACCURACY GUARANTEED WITHIN .0005"** with rugged precisely accurate ball indexing. Tool block locates and re-indexes on hardened steel precision balls which are locked between accurately milled companion ball seats in the tool block and center post. Balls can find only one seat in a spherical recess and will always return the tool block and tools to its true position.
2. **EXCLUSIVE PATENTED "O" RING SEAL** keeps fine chips and dirt out of indexing mechanism. This ensures long trouble-free operation and minimum maintenance, an especially important factor when working with abrasive materials such as cast iron, aluminum or brass.
3. **HEAVY DUTY EQUALIZER SPRING** facilitates easier indexing by raising tool block when handle is loosened. This keeps tool block and handle under constant spring loaded contact, eliminating possibility of chips entering top of turret.
4. **HARDENED SOLID STEEL TOOL BLOCK AND CENTER POST** provides hard wear surfaces and tough core properties for maximum service. Lower portion of center post, when hardened is treated to permit machining (on machinable base models).
5. **RECESSED FILLET ON ALL SIDES OF TOOL BLOCK SLOT** allows accurate seating of sharp-cornered tool and tool holders.
6. **THREE HEAVY CLAMPING SCREWS** provide rigid, full length holding of tool shank to withstand heavy cuts. This is especially important when using carbide tool holders and machining tough metals.



1 ¾" square bit mounted in Model 4½-S Turret used to face work.



2 Side of tool is used to take a 1" deep, broad-face turning cut by merely indexing Turret one position, or 30°.



3 Same tool used for inside chamfer by indexing back two positions, or 60°.

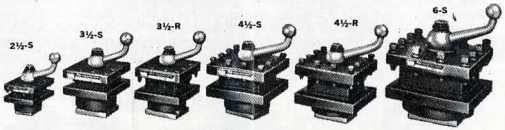
12-POSITION INDEXING GIVES TRIPLE-DUTY FROM EACH TOOL

This example save 40% in Production Time by Eliminating Second Operation Set-up.

Maximum tool efficiency is possible since all Enco Turrets index to 12 stations. Any of the 4 tools can be indexed to 3 working positions, enabling 1 tool to be used for 2 or 3 different operations if required. 12 station indexing means the use of standard tools on most jobs without re-grinding — an important advantage, because tools are often damaged in re-grinding. On jobs requiring 1 or 2 tools, duplicate tools can be set up in the turret to maintain uninterrupted production.

STANDARD T-SLOT TURRET TOOL POSTS

Enco Standard Turret Tool Posts offer the most economical 12 station indexing turret for lathes with center heights from ¾" to 2¾". Designed to give bench and engine lathes with swings from 6" to 21" greater productive capacity and all-around utility, Enco Standard Turret Tool Posts represent the best value on the market.



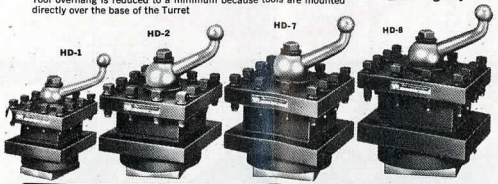
Turret Model	"A" Dimension (Center Hgt.) Range	Lathe Swing	TOOL HEIGHT RANGE FOR Solid Tools	H.S.S. Tool Hldr	Carbide Tool Hldr	TOOL BLOCK DIMENSIONS Square	Thick	S	T	"W" Dimension Min.	"W" Dimension Max.	Price
2½S	¾" to 1¾"	6" to 12"	¼" to ⅝"	—	—	2½"	1¼"	⅞"	⅝"	½"	1¾"	**$45.00**
3½S	1⅜" to 1⅞"	10" to 13"	⅜" to ½"	#000	—	3½"	1¾"	⅞"	½"	⅝"	1⅞"	**70.00**
3½R	1¼" to 2⅛"	12" to 15"	⅝" to ⅞"	#0	#T-0	3½"	2¼"	1⅛"	⅝"	½"	1¼"	**86.00**
4½S	1⅜" to 2¾"	13" to 16"	⅝" to ¾"	#0	—	4½"	2¼"	⅞"	1⅛"	1⅛"	1⅞"	**96.00**
4½R	1½" to 2⅜"	15" to 19"	¾" to 1"	#1	#T-1	4½"	2¾"	1⅜"	1⅛"	¾"	1½"	**116.00**
6S*	1¹⁵⁄₁₆" to 2¾"	14" to 21"	⅞" to 1¼"	#1 or #2	#T-1 or #T-2	6"	3¼"	1⅝"	⅞"	1⅜"	1½"	**208.00**

*Model 6S is furnished with forged steel block.

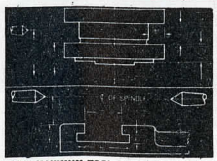
HEAVY DUTY T-Slot Turret Tool Posts

Capable of withstanding the strain of hogging cuts at higher speeds and proportionately more rugged in construction and with larger dimensions and capacity, Enco Heavy Duty Turrets increase the range of a given machine by permitting the use of large size tools. Tool overhang is reduced to a minimum because tools are mounted directly over the base of the Turret

Forged Tool Blocks for Extra Rigidity



Turret Model	"A" Dimension (Center Hgt.) Range	Lathe Swing	TOOL HEIGHT RANGE FOR Solid Tools	H.S.S. Tool Hldr	Carbide Tool Hldr	TOOL BLOCK DIMENSIONS Square	Thick	S	T	"W" Dimension Min.	"W" Dimension Max.	Price
HD-1	1⅝" to 2½"	13" to 20"	⅜" to 1"	#1	#T-1	4½"	3"	1⅝"	²¹⁄₃₂"	⅞"	1½"	**$178.00**
HD-2	2" to 3¾"	16" to 24"	1" to 1½"	#2 or #3	#T-2 or #T-3	6½"	3¾"	1³⁵⁄₆₄"	⅞"	1"	1¹³⁄₁₆"	**265.00**
HD-7	2½" to 3¹³⁄₁₆"	18" to 32"	1¼" to 1¾"	#3 or #4	#T-3 or #T-4	7"	4¼"	2½"	1"	1¼"	2¼"	**305.00**
HD-8	2½" to 4"	20" to 48"	1½" to 2"	#3 to #5	#T-3 to #T-5	8"	4¾"	2⁹⁄₁₆"	1¼"	1⅜"	2"	**390.00**



GIVE MAXIMUM TOOL SIZE TO BE USED

HOW TO ORDER AN ENCO T-SLOT TURRET

You can order and Enco T-Slot turret 2 ways

1. Machine to fit your lathe at **NO EXTRA COST** by furnishing center height T-slot dimensions and tool height. See chart No. 1 on page 27 or chart above.
2. **Machineable base turrets for immediate delivery** are stocked by most Enco franchised dealers. Ask him to contact us, should he be out of stock on the specific item you need. The lower portion of the center post when hardened on machineable base turrets is specially treated to permit machining to fit your lathe.

Enco TURRET SELECTION GUIDE

for Engine Lathes, Turret Lathes and Tracers
Based on Manufacturer's Current Specifications

LATHE & SWING	Turret	Turret Quick Change	Max. Solid Tool	Q-Series Quick Change	Max. Solid Tool	40 Pos. Quick Change	Max. Solid Tool
AMERICAN							
14"-B, 16"-C, 20"-D	HD-2	60	1"	Q-60	1"	E-3	1¼"
20"-E & 25"-F	HD-7		1½"			E-4	1½"
25"-G, 32"-H, 32"-I & 40"-J	HD-8		2"			E-5	2"
ATLAS	2¼-S	30	¾"	Q-30	½"	E-1	¾"
(Craftsman) 10" & 12"	2¼-S	30	½"	Q-30	½"	E-2	¾"
AXELSON 16"-B & 20"-W	HD-1	45	1"	Q-45	1"	E-3	1¼"
20"-D & #2516	HD-2		1½"			E-4	1½"
25"E & #3419	HD-7		1½"			E-4	1½"
32"F	HD-8		1½"			E-5	2"
BARER-MEUSER MOL 16"	4½-R	45	¾"	Q-45	¾"	E-2	¾"
MIL 18"	HDC-1	45	¾"	Q-45	¾"	E-3	¾"
MIIL 18", 20" & 22"	HD-1	45	¾"	Q-45	¾"	E-3	¾"
MIIIL 24"	6-S	60	1½"	Q-60	1½"	E-3	1"
CARROLL-JAMIESON							
16" & 18"	4½-R	45	1"	Q-45	1"	E-3	1"
CELTIC 12"	3½-S	35	½"	Q-35	½"	E-2	¾"
14"	3½-R	35	¾"	Q-35	¾"	E-3	1"
17"	4½-R	45	¾"	Q-45	¾"	E-3	1"
20"	HD-1	45	1"	Q-45	1"	E-3	1¼"
CINCINNATI 10"	3¼-S	35	½"	Q-35	½"	E-2	¾"
HYDRASHIFT 12½"	3½-R	35	¾"	Q-35	¾"	E-3	¾"
15" & 18"	HD-1	45	1"	Q-45	1"	E-3	1¼"
21½" & 26"	HD-2	60	1¼"	Q-60	1¼"	E-3	1¼"
CLAUSING 10"	2¼-S	30	½"	Q-30	7/16"	E-2	½"
12"	3½-S	35	½"	Q-35	½"	E-2	½"
14"	4½-S	45	½"	Q-35	½"	E-2	½"
CLAUSING-COLCHESTER 13"	4½-S	35	¾"	Q-35	¾"	E-2	¾"
15"	4½-R	45	¾"	Q-45	¾"	E-3	¾"
17"	6-S	60	1"	Q-60	1"	E-3	1¼"
ELGIN	2¼-S	30	½"	Q-35	½"	E-2	½"
GALLIC 14" & 16"	HD-1	45	¾"	Q-45	¾"	E-3	1"
GRAZIANO-SAG 12"	3½-R	35	¾"	Q-35	¾"	E-2	¾"
14"	4½-R	45	1"	Q-45	1"	E-3	1"
HARDINGE	3½-S	30	½"	Q-35	½"	E-2	½"
HARRISON 11" & 12"	3½-S	35	½"	Q-35	½"	E-2	½"
13"	4½-S	35	¾"	Q-35	¾"	E-2	¾"
17"	6-S	60	1¼"	Q-60	1¼"	E-3	1¼"
HERCULES AJAX 14"	4½-R	45	1"	Q-45	1"	E-3	1"
HOMACH KM/800	3½-S	35	½"	Q-35	½"	E-2	¾"
IKEGAI 20"	HD-2	60	1"	Q-60	1"	E-3	1¼"
KERRY 11" & 13"	3½-S	35	½"	Q-35	½"	E-2	¾"
LANSING 16"	4½-R	45	¾"	Q-45	¾"	E-3	1"
LeBLOND DUAL DRIVE	4½-R	45	¾"	Q-45	1"	E-3	1"
LeBLOND HEAVY DUTY							
1610	6-S	60	1"	Q-60	1"	E-3	1"
NE-2013 & 2516	6-S	60	1¼"	Q-60	1¼"	E-4	1¼"
NF-2516 & 3220	HD-2		1¼"			E-4	1¼"
N1-3220 & 4025	HD-7		1½"			E-4	1½"
NN-4025 & 5032	HD-8		2"			E-5	2"
LeBLOND REGAL							
13" & 15"	3½-R	35	¾"	Q-45	¾"	E-2	¾"
17" & 19"	4½-R	45	1"	Q-45	1"	E-3	1¼"
21" & 24"	HD-2	60	1¼"	Q-60	1¼"	E-4	1½"
LODGE & SHIPLEY 1307	3½-R	35	¾"	Q-35	¾"	E-2	¾"
1610	6-S	60	1"	Q-60	1"	E-3	1¼"
2013 & 2013-27	HD-2	60	1"	Q-60	1"	E-3	1¼"
2516, 2516-27 & 3220	HD-7		1¼"			E-4	1¼"
2516 & 2516-21	HD-8		1½"			E-4	1½"
LOGAN 9", 10", 11" & 13"	2¼-S	30	½"	Q-30	½"	E-2	½"
14"	4½-R	35	¾"	Q-35	¾"	E-2	¾"
MAXIMAT						E-2	½"
MARTIN KM	4½-S	45	¾"	Q-45	¾"	E-3	1¼"
MISAL K12	2½-S	30	½"	Q-35	½"	E-2	½"
K13	3½-S	35	½"	Q-35	½"	E-2	½"
K14	3½-S	35	½"	Q-35	½"	E-2	½"
K16	4½-R	45	¾"	Q-45	¾"	E-3	¾"
MONARCH 10"EE	3¼-S	35	½"	Q-35	½"	E-2	¾"
13" (60 & 61)	HD-1	45	¾"	Q-45	¾"	E-3	1"
K-15" Kompact	HD-1	45	1"	Q-45	1"	E-3	1"
1000EE & 16" (60 & 61)	6-S	60	1"	Q-60	1"	E-3	1"
20" (60 & 61)	6-S	60	1¼"	Q-60	1¼"	E-3	1¼"
62 Series 1610	HD-2	60	1"	Q-60	1"	E-3	1¼"
62 Series 2013	HD-2	60	1¼"	Q-60	1¼"	E-4	1¼"
Model M & 62 Series 2516	HD-7		1¼"			E-4	1¼"
Model N & 80 Series 2516	HD-7		1¼"			E-4	1¼"
80 Series 3220	HD-7		1¼"			E-4	1¼"
Model NN 90 Series 4025	HD-8		1½"			E-4	1½"
MORRI 16½"	4½-R	45	¾"	Q-45	¾"	E-3	1"
SEIKI 17½"	HD-1	45	1"	Q-45	1"	E-3	1¼"
18½"	6-S	60	1"	Q-60	1"	E-3	1¼"
20½"	HD-2	60	1¼"	Q-60	1¼"	E-4	1¼"
NEBEL 2013 & 2516	HD-2	60	1¼"	Q-60	1¼"	E-4	1¼"
SB-2516-20 & HXB-26/45	HD-2	60	1¼"	Q-60	1¼"	E-4	1¼"

LATHE & SWING	Turret	Turret Quick Change	Max. Solid Tool	Q-Series Quick Change	Max. Solid Tool	40 Pos. Quick Change	Max. Solid Tool
OKUMA 21"	6-S	60	1"	Q-60	1"	E-3	1¼"
RIVETT 60 Series	3½-S	35	½"	Q-35	½"	E-2	¾"
918S	2½-S	30	½"	Q-35	½"	E-2	¾"
1020S	3½-S	35	½"	Q-35	½"	E-2	¾"
ROCKFORD 16 & 18HX	HD-1	45	1"	Q-45	1"	E-3	1"
ROCKWELL 10"	2½-S	30	½"	Q-30	½"	E-2	¾"
11"	3½-S	35	½"	Q-35	½"	E-2	¾"
14"	3½-S	35	½"	Q-35	½"	E-2	¾"
SAIMP 12" & 14"	3½-R	35	¾"	Q-35	¾"	E-2	¾"
SCHAERER 20"	6-S	60	¾"	Q-60	1"	E-3	1"
SHELDON 10", 11" & 13"	3½-C	35	½"	Q-35	½"	E-2	¾"
15", 17"	HD-1	45	¾"	Q-45	¾"	E-3	1"
SHELDON-SEBASTIAN 13"	4½-S	35	¾"	Q-35	¾"	E-3	1"
15"	HD-1	45	1"	Q-45	1"	E-3	1"
SIDNEY 1307	3½-R	35	¾"	Q-35	¾"	E-2	¾"
169, 1812 & 2013	HD-2	60	1"	Q-60	1"	E-3	1¼"
2214 & 2516	HD-2		1¼"			E-4	1¼"
2717	HD-7		1¼"			E-4	1¼"
3419	HD-8		1½"			E-5	2"
SIGMA SN30A	4½-S	35	¾"	Q-35	¾"	E-2	¾"
SV18B	3¼-S	35	½"	Q-35	½"	E-2	¾"
SN4016, 4518 & 5020	HD-1	45	¾"	Q-45	¾"	E-3	1"
SN55-22", 63-25", 71-28"	HD-2	60	1¼"	Q-60	1¼"	E-3	1¼"
SOUTH BEND 9" & 10"	2½-S	30	½"	Q-30	½"	E-2	½"
1130? & 13"	3½-S	35	½"	Q-35	½"	E-2	½"
14½? & 16"	4½-S	45	½"	Q-45	½"	E-3	1"
17"	6-S	60	1¼"	Q-60	1¼"	E-3	1¼"
SPRINGFIELD 14" & 16"	6-S	60	1"	Q-60	1"	E-3	1"
18", 20" & 24"	HD-2	60	1¼"	Q-60	1¼"	E-4	1¼"
22"	HD-8		1½"			E-5	2"
30"	HD-8		1½"			E-5	2"
STANDARD-MODERN 10"	3½-S	30	½"	Q-35	½"	E-2	½"
12"	4½-S	35	¾"	Q-35	¾"	E-2	¾"
14" & 16"	HD-1	45	1"	Q-45	1"	E-3	1"
17"	6-S	60	1¼"	Q-60	1¼"	E-3	1¼"
VOEST 17"	4½-S	45	¾"	Q-45	¾"	E-3	1"
VDF 18 RO & 36 D, D, L	3½-R	35	½"	Q-35	¾"	E-2	¾"
21 RO, 24 RO & 44 D, L	4½-R	45	15/16"	Q-45	15/16"	E-3	1"
E3, E3H & S450	6-S	60	1¼"	Q-60	1¼"	E-3	1¼"
TURRET LATHES—FILL IN CHART NO. 3 Page 19							
BARDONS & OLIVER #2	D-2R	DT-45	1"	DQ-45	1"	DE-3	1"
#3	D-HD1	DT-45	1"	DQ-45	1"	DE-3	1"
#5	D-3	DT-60	1¼"	DQ-60	1¼"	DE-3	1¼"
#7 & #9	D-HD7		1½"			DE-4	1½"
CLAUSING	D-1	DT-35	½"	DQ-35	½"	DE-2	¾"
DEN. ACME 5.2	D-HD7		1½"			DE-4	1½"
GISHOLT #3	D-3	DT-60	1¼"	DQ-60	1¼"	DE-3	1¼"
#4 & #5	D-3	DT-60	1¼"	DQ-60	1¼"	DE-4	1¼"
J. & L. #3, #5, #7A	D-4		1½"			DE-3	1½"
LOGAN 10"	D-1	DT-30	½"	DQ-35	½"	DE-2	¾"
11" & 13"	D-1	DT-35	½"	DQ-35	½"	DE-2	¾"
MIDLAND #4	D-3	DT-60	1¼"	DQ-60	1¼"	DE-3	1¼"
#5	D-4		1½"			DE-3	1½"
MOREY #2	D-2R	DT-45	1"	DQ-45	1"	DE-3	1"
#3	D-3	DT-45	1¼"	DQ-45	1¼"	DE-3	1¼"
#4	D-3		1¼"	DQ-60	1¼"	DE-4	1¼"
OSTER #601	D-2R	DT-45	1"	DQ-45	1"	DE-3	1"
ROCKWELL 3¼"	D-1	DT-35	½"	DQ-35	½"	DE-2	¾"
SHELDON 3R	D-HD1	DT-45	1"	DQ-45	1"	DE-3	1"
SIMMONS #2	4½-CT	DT-45	½"	DQ-45	½"	DE-3	½"
SOUTH BEND 10"	D-1	DT-30	½"	DQ-35	½"	DE-2	¾"
13"	D-1	DT-35	½"	DQ-35	½"	DE-2	¾"
16"	D-HD1	DT-45	1"	DQ-45	1"	DE-3	1"
WARNER & SWASEY #1	D-1R	DT-35	½"	DQ-35	½"	DE-2	¾"
#2	D-2R	DT-45	1"	DQ-45	1"	DE-3	1"
#3 & #4	D-HD1	DT-45	1"	DQ-45	1"	DE-3	1"
#5 & #6	D-3	DT-60	1¼"	DQ-60	1¼"	DE-3	1¼"
TRACERS—COPYRITE, TRUE TRACE, OR TURCHAN—FILL IN CHART NO. 1 Page 19							
MIMIKETTE #2	2¼-S	30	½"			E-2	¾"
#4	3½-R	35	¾"	Q-35	¾"	E-2	¾"
#6	4½-R	45	¾"	Q-45	¾"	E-3	¾"
MIMIK 9000 #3	4½-R	45	¾"	Q-45	¾"	E-3	¾"
#4	6-S	60	1"	Q-60	1"	E-3	1¼"
#5	6-S	60	1"	Q-60	1"	E-3	1"
#6	HD-2		1¼"			E-4	1¼"
#7	HD-2		1¼"			E-4	1¼"
#8	HD-8		1½"			E-4	1½"
#9	HD-8		1½"			E-4	1½"
#10	HD-8		1½"			E-4	1½"
#11	HD-8		1½"			E-4	1½"

If your lathe is not shown, please fill in the appropriate dimension chart on page 27 If you still have any questions, please write us.

Enco TOOL POST SELECTION CHART BASED ON LATHE CENTER HEIGHT AND MAXIMUM TOOL HEIGHT

Lathe Center Height is the distance from top of compound to center line of spindle.

TURRET TOOL POST — TURRET QUICK-CHANGE HOLDER CAPACITY FOR O-SERIES QUICK CHANGE — Q-SERIES QUICK CHANGE — 40 POSITION QUICK CHANGE

Center Height	2¼-S	3½-C & 3½-S	4½-C & 4½-S	4½-R	6-S	HD-1	HD-2	HD-7	HD-8	30	35	45	60	30A, 30B, 30D	35A, 35B, 35D	45A, 45D	60A, 60B, 60D	635	645	660	E-1*	E-2	E-3	E-4	E-5
3"	¾"									⅜"															
3⅛"	13/16"	¾"								7/16"															
3⅜"	⅞"									½"															
3½"	15/16"	⅞"	⅞"							½"	½"														
3⅝"	1"	⅞"								½"															
3¾"	1 1/16"	⅞"	15/16"							½"	½"														
3⅞"	1⅛"	15/16"								½"															
4"	1 3/16"	15/16"	1"							½"	½"	½"													
4⅛"	1¼"	1"								½"															
4¼"	1 5/16"	1"	1 1/16"							½"	½"	½"													
4⅜"	1⅜"	1 1/16"								½"															
4½"	1 7/16"	1 1/16"	1⅛"							½"	½"	½"													
4⅝"	1½"	1⅛"								½"															
4¾"	1 9/16"	1⅛"	1 3/16"							½"	½"	½"													
4⅞"	1⅝"	1 3/16"								½"															
5"	1 11/16"	1 3/16"	1¼"							½"	½"	½"													
5⅛"	1¾"	1¼"								½"															
5¼"	1 13/16"	1¼"	1 5/16"							½"	½"	½"													
5⅜"	1⅞"	1 5/16"								½"															
5½"	1 15/16"	1 5/16"	1⅜"							½"	½"	½"													
5⅝"	2"	1⅜"								½"															
5¾"	2 1/16"	1⅜"	1 7/16"							½"	½"	½"													
5⅞"	2⅛"	1 7/16"								½"															
6"	2 3/16"	1 7/16"	1½"							½"	½"	½"													
6⅛"	2¼"	1½"								½"															
6¼"	2 5/16"	1½"	1 9/16"							½"	½"	½"													
6⅜"	2⅜"	1 9/16"								½"															
6½"	2 7/16"	1 9/16"	1⅝"							½"	½"	½"													
6⅝"	2½"	1⅝"								½"															
6¾"	2 9/16"	1⅝"	1 11/16"							½"	½"	½"													
6⅞"	2⅝"	1 11/16"								½"															
7"	2 11/16"	1 11/16"	1¾"							½"	½"	½"													
7⅛"	2¾"	1¾"								½"															
7¼"	2 13/16"	1¾"	1 13/16"							½"	½"	½"													
7⅜"	2⅞"	1 13/16"								½"															
7½"	2 15/16"	1 13/16"	1⅞"							½"	½"	½"													
7⅝"	3"	1⅞"								½"															
7¾"	3 1/16"	1⅞"	1 15/16"							½"	½"	½"													
7⅞"	3⅛"	1 15/16"								½"															
8"	3 3/16"	1 15/16"	2"							½"	½"	½"													

Should your application require a larger tool height than shown above, we call your attention to our Compound Rests.

Replacement models shown on pages 5 and 10. These turrets give you more rigidity, since they eliminate the composite end gear arrangement, and provide a full 360° angular turning and chamfering can be done with the face or side of the tools because of the 12 position indexing which is standard on all Enco Turret and Turret-Quick Change Tool Posts.

In selecting your turret it is best to choose one which will accommodate the largest tool you will ever need. You can use smaller tools merely by shimming them up. You then have a turret that can be used for any work within the capacity of your machine. Turret Lathe Tools are listed according to the maximum tool height. In S.S. or Carbide toolholder used.

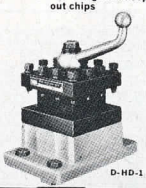
*From ¼" center height

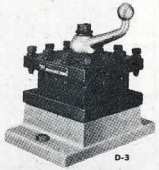
Enco CROSS SLIDE TURRET TOOL POSTS

- Guaranteed to re-index within .0005"
- 12 station indexing
- "O" Ring Seal keeps out chips
- Save at least $100.00 on each Turret


D-1R

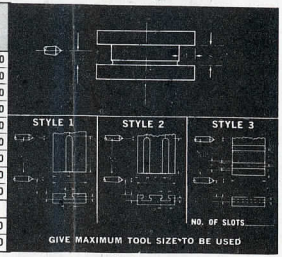

D-2R


D-HD-1


D-3

Turret Model	TOOL HEIGHT RANGE: Solid Tools	Max. H.S.S. Tool Holder	Max. Carbide Tool Holder	TOOL BLOCK DIMENSIONS: Square	Thick	S	T	Price
D-1	1/8" to 1/2"	#000	—	3 1/2"	1 1/4"	3/8"	1/2"	$122.00
D-1R	3/8" to 1/2"	#0	#T-0	3 1/2"	2 1/4"	1 1/32"	5/16"	138.00
D-2	1/2" to 3/4"	#0	—	4 1/2"	2 1/4"	1/2"	1 1/16"	166.00
D-2R	3/4" to 1"	#1	#T-1	4 1/2"	2 3/4"	1 15/32"	1 1/16"	186.00
D-HD-1*	3/4" to 1"	#1	#T-1	4 1/2"	3"	1 15/32"	1 15/32"	275.00
D-3*	1" to 1 1/4"	#1 or #2	#T-1 or #T-2	6"	3 1/16"	1 3/16"	1 3/16"	310.00
D-4*	1" to 1 1/2"	#2 or #3	#T-2 or #T-3	6 1/2"	3 3/16"	1 11/32"	1/2"	370.00
D-HD-7*	1 1/4" to 1 3/4"	#3 or #4	#T-3 or #T-4	7"	4 1/4"	2 1/32"	1"	420.00
D-HD-8*	1 1/2" to 2"	#3 to #5	#T-3 to #T-5	8"	4 1/2"	2 29/32"	1 1/4"	535.00
SELF-INDEXING CAM LOCKING TURRETS								
3 1/2-CT	1/2" to 1/2"	#000	—	3 1/2"	1 3/16"	5/16"	1/2"	160.00
4 1/2-CT	3/8" to 3/4"	#0	—	4 1/2"	2 1/4"	3/4"	1 1/16"	210.00

*These models furnished with forged tool blocks.



A new Enco Cross-Slide Turret—fitted to your cross-slide—costs less than any competitive cross-slide turret . . . and in most cases, less than rebuilding your present turret! The .0005" re-indexing accuracy, plus 12 station indexing means more accurate turret lathe work and greater versatility, i.e. chamfering with a turning tool. The exclusive "O" Ring Seal keeps out abrasive chips and reduces maintenance and down-time.

The 3½-CT and 4½-CT models are self-indexing cam locking turrets. Single action, one-handed indexing increases production by permitting simultaneous bar feeding or cross-slide movement.

TO ORDER AN ENCO CROSS SLIDE TURRET

Cross-Slide Turrets are custom built with flanged or block base to fit your cross-slide.

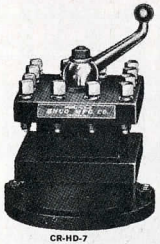
Important: When ordering Cross-Slide Turrets, please supply make of lathe, tool height and all dimensions specified on the convenient Order Form.


MODEL D-2R WITH TOOLS MOUNTED


MODEL 4½-CT

For aid in selecting correct tool post, see TURRET SELECTION GUIDE by make of lathe on page 36

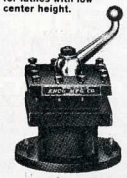
Enco COMPOUND REPLACEMENT TURRET TOOL POSTS


CR-HD-7

- Provides extremely heavy mounting for heavy work.


CR-6

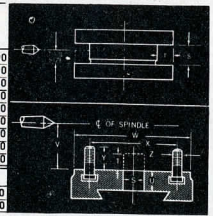
- Greater Tool capacity for lathes with low center height.


CR-4½R


CR-3½R

Turret Model	Suggested Lathe Swing	TOOL HEIGHT RANGE: Solid Tools	Max. H.S.S. Tool Holder	Max. Carbide Tool Holder	TOOL BLOCK DIMENSIONS: Square	Thick	S	T	Price
CR-3½-S	6" to 12"	1/8" to 1/2"	#000		3 1/2"	1 1/4"	3/8"	1/2"	$137.00
CR-3½-R	10" to 13"	3/8" to 3/4"	#0	#T-0	3 1/2"	2 1/4"	1 1/32"	5/16"	153.00
CR-4½-S	10" to 15"	3/8" to 3/4"	#0		4 1/2"	2 1/4"	1/2"	1 1/16"	171.00
CR-4½-R	12" to 16"	3/4" to 1"	#1	#T-1	4 1/2"	2 3/4"	1 15/32"	1 1/16"	193.00
CR-HD-1*	13" to 18"	3/4" to 1"	#1	#T-1	4 1/2"	3"	1 15/32"	1 15/32"	275.00
CR-6*	14" to 18"	1/2" to 1 1/4"	#1 or #2	#T-1 or #T-2	6"	3 1/4"	1 7/16"	1 3/16"	310.00
CR-HD-2*	16" to 22"	1" to 1 1/2"	#2 or #3	#T-2 or #T-3	6 1/2"	3 1/4"	1 11/32"	1/2"	390.00
CR-HD-7*	18" to 27"	1 1/4" to 1 3/4"	#3 or #4	#T-3 or #T-4	7"	4 1/4"	2 1/32"	1"	455.00
CR-HD-8*	20" to 48"	1 1/2" to 2"	#3 to #5	#T-3 to #T-5	8"	4 1/4"	2 29/32"	1 1/4"	560.00
SELF-INDEXING CAM LOCKING TURRETS									
CR-3½-C	6" to 12"	1/2" to 1/2"	#000	—	3 1/2"	1 3/16"	5/16"	1/2"	171.00
CR-4½-C	10" to 15"	1/2" to 3/4"	#0	—	4 1/2"	2 1/4"	3/4"	1 1/16"	218.00

*These models furnished with forged tool blocks.

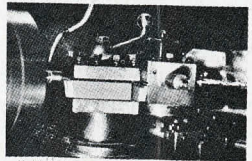


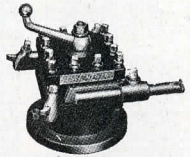
Compound Replacement Turrets are designed for use on lathes with low center height where the use of larger and heavier tooling is desirable. Because these Turrets replace the entire compound, they provide a more rigid mounting which permits the use of larger solid tools and tool holders than can be used in Standard or Heavy Duty Turrets, since the lathe center height is not a limiting factor. The Compound Replacement Turret has 12 indexing positions at 30° intervals. This means many angular turning and chamfering jobs can be done faster and easier, by indexing the face or side of the tool into correct position.

Maximum tool rigidity is achieved when using an Enco Compound Replacement Turret, since movement in the compound, compound gibs, or compound feed screw and nut are eliminated.

TO ORDER A COMPOUND REPLACEMENT TURRET:

Compound Replacement Turrets are custom built to fit your machine. When ordering, requesting quotation or delivery, please supply all dimensions and data shown in Chart on the convenient Order Form.


Model CR-HD-1 tooled with turning, facing, radius form tool and circular form tools. Necking and chamfering also done with facing tool by back indexing 30°. Elimination of compound slide gives more room for bed turret operation plus greater rigidity.


Model CR-6 Compound Replacement Turret Tool Post shown with roughing, turning and boring tools. Compound Replacement Models can mount from ½" to 2" solid tools, or from #0 to #5 tool holders, depending on your selection.

SELF-INDEXING CAM LOCKING TURRET TOOL POSTS

FOR 9" to 18" LATHES

Enco Cam Locking Turrets incorporate all the operating features of other Enco Turrets. The cam lock provides fast, one-hand turret unlocking, indexing, and locking, leaving the operator's other hand free for bar feeding or cross slide movement. The cam locking handle positively locks the turret block in place with slight upward hand pressure.



Model 4½-C used with Enco Model B Tailstock Turret. Savings of 40% were effected. Tooling can be used on other jobs, and retained as a permanent set-up.

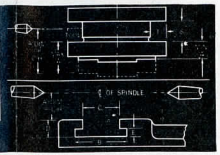


3½-C Size

TO ORDER A 3½-C or 4½-C CAM LOCKING TURRET

1. Determine "A" dimension (center height) of your lathe and maximum tool height.
2. Select 3½-C if you use ¾" or ½" maximum tool and center height ("A") is 1⅛" to 1¾". Select a 4½-C if you use ⅝" or ¾" maximum tool and center height is 1⅜" to 2⅜".
3. Refer to chart on order form

Turret Model	"A" Dimension (Center Hgt.) Range	Lathe Swing	TOOL HEIGHT RANGE FOR Solid Tools	H.S.S. Toolholder	Price	TOOL BLOCK DIMENSIONS Square	Thick	S	T	"W" Dimension Min.	Max.
3½-C	1⅜" to 1⅞"	9" to 13"	⅜" to ½"	#000	110.00	3½"	1¼"	⅝"	½"	⅝"	1⅜"
4½-C	1⅝" to 2⅜"	13" to 18"	⅝" to ¾"	#0	142.00	4½"	2¼"	⅞"	1¼"	1¼"	1⅝"



GIVE MAXIMUM TOOL SIZE TO BE USED

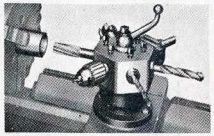
CROSS-SLIDE HEXAGON TURRETS

- **Utilize carriage power feed to feed Hexagon Turret**
- **Rigidly holds 6 Tools**
- **Guaranteed .0005" Re-Indexing Accuracy**



Model CS-6

Enco Cross-Slide Hexagon Turrets permit mounting 6 tools on your cross-slide to increase production capacity. Powered by use of the apron feed, these turrets bring advantages of a power operated turret to an ordinary lathe at low cost.

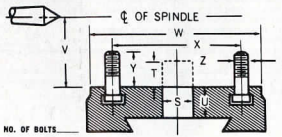


These turrets may be bored out to receive all standard screw machine and turret tools, or flanged type holders may be bolted to the faces. Operations such as drilling, reaming, boring, turning, facing, tapping, die head threading, can be done with the power feed. The hexagon head is blank. Tool mounting holes should be drilled and bored on your lathe to size required, to insure accuracy.

TO ORDER A CROSS-SLIDE TURRET

Supply all dimensions and data specified on the convenient Order Form.

Model	Recommended Lathe Swing	Tool Hole Capacity	Size of Hex. Across Flats	Hex Head Face Dimensions Width	Height	Price
CS-4	9" to 12"	½" to 1"	5"	2¾" x	2⅝"	272.00
CS-6	12" to 18"	¾" to 1¼"	6"	3¼" x	3⅛"	342.00
CS-8	16" to 28"	1" to 1¾"	7½"	4⅛" x	4⅛"	435.00
CS-10	24" to 40"	1½" to 2"	9"	5¼" x	4⅛"	480.00



NOTE—Give "S" in decimal dim. whether pilot or hole. If hole give only "U" dim. If pilot give only "T" dim. Specify solid tool or toolholder size when ordering.

TAILSTOCK TURRETS

PUT 6 TOOLS TO WORK IN YOUR LATHE TAILSTOCK

ENCO TAILSTOCK TURRETS ARE GUARANTEED FOR 1 YEAR

TRY ONE AT OUR RISK

SATISFACTION GUARANTEED OR MONEY BACK

An Enco Tailstock Turret, will multiply your machine's productive capacity and efficiency up to six times. The availability of six tools for tailstock operations often eliminates the need for second operation work and substantially reduces machine time in piece-part production. Because of their low cost, many users use Enco Tailstock Turrets as special chucks for each job, keeping tooling intact, thus saving set-up time and costs. Enco Tailstock Turrets are as simple to mount in your lathe as a center.

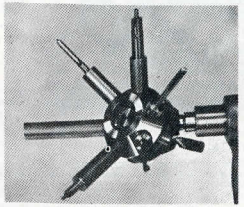
Enco Tailstock Turrets operate under finger tip control. Tool indexing is quick and convenient. Built-in accuracy is ensured by careful manufacturing, with all parts fitted to close tolerances. Both the head and base are machined from Meehanite, a close-grained semi-steel casting ideally suited for the application.

Tool holes are drilled, bored and reamed to plus or minus .001" after the turret is assembled to assure accurate alignment of the tool holes with the Morse Taper shank arbor. All arbors are precision ground so that when the turret is installed in an accurate tailstock, perfect centering of tools will result.

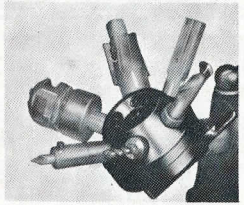
Model B-1 with 1" straight shank arbor is especially recommended for use on turret lathes and screw machines to add tool capacity.

TO ORDER A TAILSTOCK TURRET

Specify Model and Arbor Size. (See Table and use the convenient Order Form.)



Model A



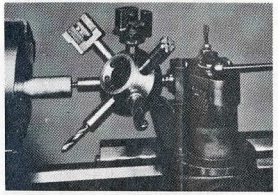
Model B

IMMEDIATE DELIVERY!

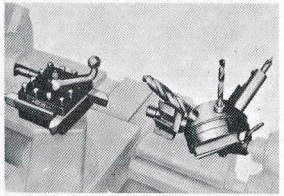
All Enco Tailstock Turrets are carried in stock.

Model	Available with Arbor Size	Size of Tool Holes	Diameter Head	Price
A	#1 or #2 Morse Taper	½"	2½"	$45.00
B	#2 or #3 Morse Taper	1"	5"	79.00
B	#4 Morse Taper	1"	5"	81.00
B-1	1" Diameter straight shank	1"	5"	81.00

GET TURRET LATHE VERSATILITY AT LOW COST BY MOUNTING ENCO TURRET OR QUICK CHANGE TOOLPOST AND ENCO TAILSTOCK TURRET ON LATHE



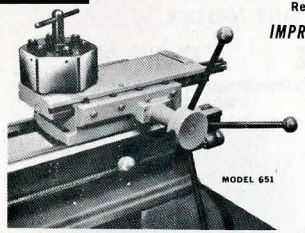
Enco 40-position toolpost with Enco Model B tailstock turret uses power feed of cross slide for more accurate work and better finish. Holds 6 tools.



Model 4½-S Turret Toolpost used with Model B Tailstock Turret for short run production jobs. This particular application produced savings of 45% in production time. The Turret Toolpost is being used to do an internal threading operation.

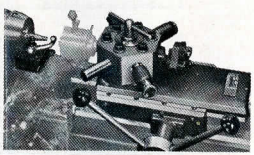
Enco SELF-INDEXING HEXTURRET with EXCLUSIVE DOUBLE RACK & DOUBLE GEAR DRIVE for EQUALIZED FEED and PRECISION WORK

Convert Your Engine Lathe to a Hand Turret Lathe at Low Cost
Re-indexing Accuracy plus or minus .0005".



IMPROVE PERFORMANCE, INCREASE PRODUCTION OF A NEW OR OLD LATHE

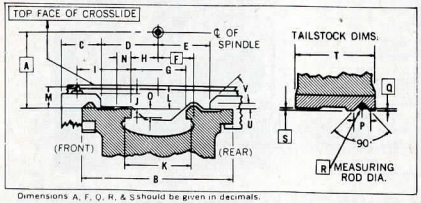
Special shoulder screw machined on a popular 10" lathe equipped with our Model 651 Hexturret and our Model 2½-S Turret Tool Post. Quantities of only 150 pieces were required of each of four different size screws. All tooling used was standard and class #3 fit was required for threaded end. Tolerances on length of step were held to plus .002" minus .000" and diameter was held to plus or minus .0005".



HEXTURRET SPECIFICATIONS

HEXAGON HEAD DIMENSIONS											
Model	Recommended Lathe Swing	Face Dimensions: Across Flats	Height	Width	Tool Hole Size Hexagon Head Can Be Bored To	Slide Length	Total Slide Travel	Working Travel of Slide	Base Length	Diameter of Tool Clearance Over Slide
651	9" to 13"	5⅛"	2⅞"	3"	⅝" to 1"	16½"	7½"	6½"	11¾"	10"-11" swing 3¼" 12"-13" swing 3⅜"
650	12" to 16"	7"	3⅜"	3⅞"	1" to 1½"	16½"	7½"	6½"	11¾"	12" to 16" swing furnished with quotation

When ordering a hexturret, specify make and swing of lathe and supply all dimensions indicated in chart below.



Dimensions A, F, Q, R, & S should be given in decimals.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V

With an Enco Hexturret on your lathe, you can perform all operations normally done on a turret lathe or hand screw machine including drilling, counterboring, countersinking, spot facing, reaming, turning, etc.

Hexagon head is furnished blank and tool holes are to be bored or reamed by customer on his lathe to insure proper alignment. Soft tool shank locks are bored at same time. Size of tool holes that can be bored are shown in chart above. Mounting holes for flanged tools must be drilled and tapped to suit tools used.

The hexagon head face dimensions on 9" lathes only, is 2¾" x 3" and tool clearance over slide is 2⅝" dia.

The difference between total slide travel and working travel is the distance required for indexing the turret head.

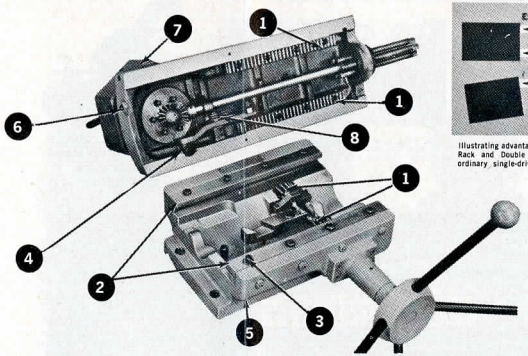
CUSTOM BUILT TO FIT

Enco Self-Indexing Hexturrets are custom built to fit all lathes from 9" to 16" actual swing, regardless of age or make of machine. See Specification Drawings on order form. These Hexturrets may also be fitted to old turret lathes and screw machines up to 16" swing, giving you better performance from your obsolete machines.

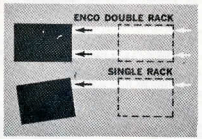
Lathe Make	Swing	Model No. 651	Model No. 650
American	14"		$800
Atlas	10" or 12" (Craftsman 12)	$520	
Celtic	12" 14" 17" 20"	570	685 735 760
Chori	14"		690
Carroll-Jamieson	15" 16" 18"		670 695 775
Cincinnati Hydrashift	10" 12½" 15" or 17" 18" or 19"	600	635 680 730
Clausing	10" 12" 14"	520	590 635
Clausing-Colchester	13" 15" 17"	565 610	615 665 740
Harrison	11" 12" 13" 16"	540 570 585	640 750
Hercules	14"		680
Kerry	11" to 13"	570	
LeBlond	12" 14" 16"		690 715 765
LeBlond Regal	13" 15" 17" 19"	590	630 665 705 735
Lodge & Shipley	10" Hiturn 12" 14" 16"	715	665 680 715 770
Logan	9" 10", 11", 12" 14"	500 520 525 570	600 645
Monarch	10" 13" K 13" K 16" K 18" 16"	580	685 720 760
Rockford	14" 16" 18"		700 735 770
Rockwell	10" and 11" 14"	520	640
Graziano Sag	12" 14"	660	680
Saimp	12" 14"	585 525	665
Sheldon-Sebastian	13" 15"	590	625 665
Sheldon	10" 11" 13" 15"	530 550	625 665
South Bend	9" 10" 13" 14½" 16" 17"	500 525 585	615 675 735
Standard Modern	11" 12" 13"	585 610 620	665 675

This is only a partial listing. Enco Hexturrets can be supplied for other lathes from 9" to 17" swing. For quotation, fill in dimensions indicated on chart at left.

ENCO HEXTURRETS ARE GUARANTEED FOR 1 YEAR



DOUBLE RACK & DOUBLE GEAR DRIVE



Illustrating advantage of Enco's patented Double Rack and Double Gear Drive compared with ordinary single-drive. See 1 below.

1. Double rack and gear drive equalizes tool feed pressure, gives smooth, parallel slide travel and minimizes torsional strain as load is equally divided, even under heavy cuts. This results in cleaner, more precise work.
2. Two-piece adjustable gibs, front and rear, provide lateral adjustment for slide travel.
3. Gib lock provided for work on center or for recessing, necking, or grooving operations from turret.
4. Indexing precision is assured by hardened and ground tapered seat bushings in the turret head. Into these bushings locates the hardened and ground tapered nose index pin, which in turn, reciprocates in a full bearing sleeve. This extra long sleeve is hardened, ground and lapped to ensure accurate guiding of index pin and precise location of turret head. All of these parts are made and fitted to extremely close tolerances and are replaceable when worn.
5. The turret base is constructed to clear the wings of the lathe carriage. This permits the turret to be moved close to the headstock for collet work or to perform facing operations from the compound or cross-slide when necessary.
6. Safety stop screw prevents over-ride of head positioning. Also keeps slide from returning too far on back stroke preventing possible injury to mechanism.
7. The hexagon head revolves in an aluminum bronze bearing in the slide having a tensile strength of 90,000 p.s.i.
8. Lever action spring which locates index pin into index bushings thru trip lever, is so designed that constant pressure is exerted in holding hex head in proper position. Longer spring life is attained than thru use of compression springs.

ADDITIONAL FEATURES

- Hexagonal head design permits mounting 6 flanged tools or tool holders.
- All bearing surfaces on base, gibs and slide are precision ground and fitted.
- Double external clamping screws at each end of base eliminate crawling or slipping under heavy cuts. Turret base screws are clamped from top, not from under the ways, for easy positioning and secure locking.
- Hardened, automatically indexing stop screws.
- All levers, trip blocks and indexing block hardened for wear and stability.
- Pilot spoke design gives positive control and smooth operation of the slide. The 14 to 1 mechanical advantage of the pilot wheel means less operator fatigue.
- Soft large tool shank locks which are bored out when tool holes are bored, give positive gripping of tool shanks without indenting shanks. Tool holes can be bored out for any standard size shank as shown in specifications.
- For heavy work or interrupted cuts requiring extra rigidity, only a quarter turn of the handle is required to lock turret head solidly. For normal concentric work, the spring loaded turret is sufficiently rigid with the locking handle open.
- The step construction of the turret head and slide minimizes the possibility of chips working in between the head and slide.
- In making every effort to offer you a precise long lasting bed turret all castings are heat treated to ensure stability.

M3 HIGH SPEED COBALT STEEL BORING BARS.

Shanks are ground and hardened to 64-66. Rockwell on C Scale. All sizes come in 2 lengths—short for counter boring and short hole boring, long with offset taper and extra length for more rigidity in deep hole boring.

A Shank Dia.	B Length	C Bore Depth	D Min. Bore	Model No.	Price Each	Price Per Set
3/8"	2-13/16"	9/16"	3/16"	650	$ 4.15	Model No. 9050 1 of each size $37.30
	2-3/16"	15/16"	3/16"	651	4.15	
	2.0"	3/4"	1/4"	652	4.40	
	2-1/2"	1-1/4"	5/16"	653	4.50	
	2-3/16"	1"	5/16"	654	4.75	
	2-3/16"	1-9/16"	5/16"	655	4.85	9 Pc. Set
	3-1/8"	1-1/8"	3/8"	656	5.10	
	3-1/8"	1-7/8"	3/8"	657	5.25	
1/2"	2-1/8"	3/4"	1/4"	658	5.35	Model No. 9060 1 of each size $58.90
	2-5/16"	1"	1/4"	659	5.35	
	2-5/16"	1-5/16"	5/16"	670	5.50	
	2-15/16"	1-9/16"	5/16"	671	5.60	
	3-1/2"	1-1/8"	3/8"	672	5.80	
	3-1/4"	1-7/8"	3/8"	673	5.90	
	3-11/16"	1-5/16"	7/16"	674	6.15	10 Pc. Set
	3-9/16"	2-3/16"	7/16"	675	6.25	
	3-7/8"	1-1/2"	1/2"	676	6.50	
	3-7/8"	2-1/2"	1/2"	677	6.60	
5/8"	2-5/8"	1-1/8"	3/8"	678	7.10	Model No. 9070 1 of each size $90.60
	3-1/8"	1-7/8"	3/8"	679	7.40	
	3-13/16"	1-5/16"	7/16"	680	7.85	
	3-13/16"	2-3/16"	7/16"	681	8.25	
	3.0"	1-1/2"	1/2"	682	8.75	
	4.0"	2-1/2"	1/2"	683	9.10	10 Pc. Set
	3-3/16"	1-11/16"	9/16"	684	9.90	
	4-5/16"	2-13/16"	9/16"	685	10.25	
	3-3/4"	1-7/8"	5/8"	686	10.80	
	3-7/8"	3-1/8"	5/8"	687	11.20	
3/4"	2-7/8"	1-1/8"	3/8"	688	8.50	Model No. 9080 1 of each size $144.70
	3-1/8"	1-7/8"	3/8"	689	8.70	
	3-5/16"	1-5/16"	7/16"	690	9.10	
	3-15/16"	2-3/16"	7/16"	691	9.40	
	4.0"	1-1/2"	1/2"	692	9.60	
	4-1/4"	2-1/2"	1/2"	693	9.90	
	3-7/16"	1-11/16"	9/16"	694	10.15	
	4-9/16"	2-13/16"	9/16"	695	10.45	14 Pc. Set
	3-5/8"	1-7/8"	5/8"	696	10.80	
	4-7/8"	3-1/8"	5/8"	697	11.05	
	3-13/16"	2-1/16"	11/16"	698	11.45	
	5-3/16"	3-7/16"	11/16"	699	11.85	
	4.0"	1-1/2"	3/4"	700	11.95	
	5-1/2"	3-3/4"	3/4"	701	12.20	

CARBIDE TIPPED BORING BARS

4140 Cold Rolled Steel shanks are ground and hardened to 50 Rockwell on C Scale. These bars are Black oxide coated, with the tip diamond ground for instant use. Minimum bore sizes are available in 3 lengths—short for counter boring and short hole work, medium for general boring, long for extra deep hole boring.

STOCKED IN 4 GRADES. Be Sure to Specify Grade

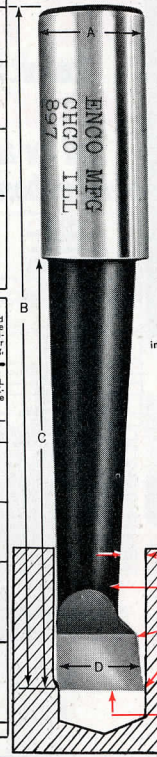
ORDER BY MODEL NUMBER. SPECIFY GRADE AND MODEL NUMBER WHEN ORDERING CARBIDE TIPPED BARS. (EXAMPLE): To order ½" CARBIDE SET for general purpose cast iron, order 9020-2.

A Shank Dia.	B Length	C Bore Depth	D Min. Bore	Model No.	Price Each	Price Per Set
3/8"	2-3/8"	3/4"	5/16"	801	$ 3.80	Model No. 9010 1 of each size in storage rack. 9 Pc. Set $40.60
	2-3/8"	1-1/2"	5/16"	802	4.05	
	2-3/8"	1-15/16"	3/8"	803	4.15	
	3-11/16"	1-11/16"	7/16"	804	4.40	
	3-11/16"	1-7/8"	7/16"	805	4.60	
	3-3/8"	1-1/8"	7/16"	807	4.85	
	3-15/16"	1-11/16"	7/16"	808	4.95	
	3-1/2"	2-1/4"	7/16"	809	5.10	
1/2"	2-1/4"	3/4"	5/16"	810	5.30	Model No. 9020 1 of each size in storage rack. 9 Pc. Set $53.00
	2-5/8"	1-1/8"	5/16"	811	5.40	
	3.0"	1-1/2"	5/16"	812	5.55	
	2-5/8"	1-1/8"	7/16"	813	5.80	
	3-3/16"	1-11/16"	7/16"	814	5.90	
	3-3/4"	2-1/4"	7/16"	815	6.00	
	3.0"	1-1/2"	9/16"	816	6.25	
	3-3/4"	2-1/4"	9/16"	817	6.35	
	4.0"	3.0"	9/16"	818	6.45	
5/8"	2-1/4"	3/4"	5/16"	819	6.55	Model No. 9030 1 of each size in storage rack. 12 Pc. Set $97.95
	2-5/8"	1-1/8"	5/16"	820	6.80	
	3.0"	1-1/2"	5/16"	821	7.00	
	2-5/8"	1.45	7/16"	822	7.45	
	3-3/16"	1-11/16"	7/16"	823	7.70	
	3-3/4"	2-1/4"	7/16"	824	7.85	
	3.0"	1-1/2"	9/16"	825	8.35	
	3-7/16"	2-1/4"	9/16"	826	8.60	
	3-3/4"	3.0"	9/16"	827	8.90	
	3-5/8"	1-7/8"	11/16"	828	9.30	
	4-5/16"	2-13/16"	11/16"	829	9.55	
	5-1/4"	3-3/4"	11/16"	830	9.85	
3/4"	3-1/8"	1-1/8"	7/16"	831	7.70	Model No. 9040 1 of each size $114.50
	3-11/16"	1-11/16"	7/16"	832	8.00	
	3-15/16"	2-1/4"	7/16"	833	8.25	
	3-1/2"	1-1/2"	9/16"	834	8.65	
	4-1/4"	2-1/4"	9/16"	835	8.90	
	5.0"	3.0"	9/16"	836	9.15	
	3-7/8"	1-7/8"	11/16"	837	9.60	
	4-13/16"	2-13/16"	11/16"	838	9.95	12 Pc. Set
	5-3/4"	3-3/4"	11/16"	839	10.00	
	4-1/4"	2-1/4"	13/16"	840	10.85	
	5-1/4"	3-3/8"	13/16"	841	11.25	
	6-1/2"	4-1/2"	13/16"	842	11.75	
1"	3-1/16"	1-1/8"	7/16"	843	11.50	
	5-1/2"	4-1/2"	13/16"	844	12.50	

New Enco Precision BORING BARS

25 TO 40% LOWER Than Most Boring Bars

- Up to 100% longer tool life
- All shanks are ground to +0"-.0005"
- Tool life is extended because each bar has far more steel behind the cutting edge for heavier chatter free cut, deeper bore and more precise work
- The same bar can bore flat-bottom hole or face.
- Grind bar on cutting end for special tools such as grooving, threading, or automatic operations.
- All ½", ¾", and 1" shanks fit Enco boring and facing heads on back cover. Shanks fit Enco quick-change tool holders.



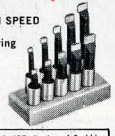
TRY ONE Now AT OUR RISK

Satisfaction Guaranteed or Money Back

ENCO CARBIDE TIPPED Boring Bar Set Stocked in 4 Grades



M3 HIGH SPEED COBALT Steel Boring Bar Set



Immediate Delivery

- Offset Taper for Maximum Clearance
- Add Strength with Rigidity
- More Tool Life
- Flat Facing

COMPARATIVE CHART—Grades of Carbide

	Cast Iron Non-Ferrous		Steel & Steel Alloys	
	General Purpose	Precision Boring	General Purpose	Precision Boring
ENCO	C-2	C-4	C-6	C-8
Adamas	A AM	AAA	D	CC 80
Carmet	C4A	CA8	CA610 CA720	CA704
Carboloy	860 883	999	370 788	330
Coromant	H20 H29	H05	SA-62 S1P	F02
Firthilomet	FA6	FA8	FT4 FT5	FT7
Firthite	HA H23	HF	NTA TXH	T31 WF
Kennametal	K6 K68	K11	K25	K14 K165
Newcomer	N20	N40	N60	N80 NM95
Talide	C91	C95	S90	S94
Valenite	VC2	VC4	VC6	VC8
VR/Wesson	2A5 G1	2A7 VR52	VR75	VR65
Willey	E6	E3	710 8A	3AT 4A

New Enco TRUE-FORM Relieved Boring Bars

Resharpen 40 to 65 times for lowest price per cutting edge

1. Resharpen bars 4 times faster. Operator resharpens **only** top rake angle instead of 3, 4 or 5 angles.
2. Tool life extended 300 to 400 percent.
3. Carbide head has 4 to 8 times more carbide than carbide-tipped bars.
4. All shanks ground to ±0005".
5. Sets provide maximum diameter range with minimum number of bars. Example: Enco Set No. 9160 covers a range from ⅛" to 9/16" with just 6 bars.





Enco TRUE FORM bar superimposed on conventional bar to show more backup and strength behind cutting edge.

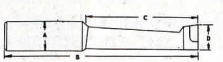
Each line represents a regrind. Tool is brought up to center after each regrind.

IMMEDIATE DELIVERY

ONLY 9c PER CUTTING EDGE

Using a ⅞" grinding life and .014" grind off each time tool is resharpened gives 62 cutting edges or regrinds for a boring bar that costs only $5.60. The **COST IS ONLY 9c PER CUTTING EDGE.**







REGRINDING FIXTURE

Resharpen **Enco TRUE FORM** relieved carbide or high speed boring bars fast and easy.

FEATURES

1. Diamond serves as guide for setting grinding wheel
2. Carbide-tipped stop for correct endwise location of tools

Complete instructions included

Model	Description	Price
9100	Fixture for regrinding ¾" bars	$35.00
9101	Collet for regrinding ⅜" bars	10.00
9102	Collet for regrinding ½" bars	10.00



M4 HIGH SPEED VANADIUM STEEL BORING BARS

HARDENED TO 64 ROCKWELL ON C SCALE

A. SHANK DIA.	B. LENGTH	C. BORE DEPTH	D. MIN. BORE	MODEL NUMBER	PRICE EACH	PRICE PER SET
⅜"	2	1/2	1/8	#960	$ 5.10	RANGE OF SET 1/8-9/16 1 OF EACH #9150 $35.30
	2	3/4	3/16	#961	5.05	
	2-3/16	1	1/4	#962	5.05	
	2-9/16	1-1/4	5/16	#963	5.80	
	2-3/4	1-3/4	7/16	#964	6.65	
	3-3/8	2-1/4	9/16	#965	7.65	
½"	2	1/2	1/8	#966	6.00	RANGE OF SET 1/8-9/16 1 OF EACH #9160 $42.60
	2	3/4	3/16	#967	6.00	
	2-3/16	1	1/4	#968	6.00	
	2-9/16	1-1/4	5/16	#969	6.85	
	2-3/4	1-1/2	7/16	#970	7.80	
	3-3/8	2-1/4	9/16	#971	9.10	
¾"	2-3/16	1	1/4	#972	8.10	RANGE OF SET 1/4-3/4 1 OF EACH #9170 $68.90
	2-9/16	1-1/4	5/16	#973	8.20	
	2-3/4	1-1/2	7/16	#974	10.50	
	3-3/8	2-1/4	9/16	#975	12.50	
	4	2-3/8	11/16	#976	13.50	
	4-1/2	2-5/8	3/4	#977	16.00	
1"	4-1/2	2-5/8	5/8	#978	16.25	RANGE OF SET 5/8 to 1 1 OF EACH #9180 $78.65
	5	3	3/4	#979	18.00	
	5-1/2	3-1/2	7/8	#980	19.90	
	6	3-3/4	1	#981	24.50	

CARBIDE HEAD BORING BARS HARDENED AND GROUND TO 52 ROCKWELL ON C SCALE

Stocked in 2 grades—C-2 for cast iron and non-ferrous metals and C-7 for steel and steel alloys. Specify model number and grade when ordering. Example: to order ½" set for general purpose cast iron, order 9120-2.

A. SHANK DIA.	B. LENGTH	C. BORE DEPTH	D. MIN. BORE	MODEL NUMBER	PRICE EACH	PRICE PER SET
⅜"	2	1/2	1/8	#931	$12.50	RANGE OF SET 1/8-9/16 1 OF EACH #9110 $65.60
	2	3/4	3/16	#932	9.60	
	2-3/16	1	1/4	#933	9.60	
	2-9/16	1-1/4	5/16	#934	9.80	
	2-3/4	1-3/4	7/16	#935	11.20	
	3-3/8	2-1/4	9/16	#936	12.90	
½"	2	1/2	1/8	#937	14.20	RANGE OF SET 1/8-9/16 1 OF EACH #9120 $76.50
	2	3/4	3/16	#938	11.40	
	2-3/16	1	1/4	#939	11.40	
	2-9/16	1-1/4	5/16	#940	11.40	
	2-3/4	1-1/2	7/16	#941	13.15	
	3-3/8	2-1/4	9/16	#942	14.95	
¾"	2-3/16	1	1/4	#943	15.30	RANGE OF SET 1/4-3/4 1 OF EACH #9130 $109.60
	2-9/16	1-1/4	5/16	#944	15.30	
	2-3/4	1-1/2	7/16	#945	16.30	
	3-3/8	2-1/4	9/16	#946	20.90	
	4	2-3/8	11/16	#947	19.50	
	4-1/2	2-5/8	3/4	#948*	21.80	
1"	4-1/2	2-5/8	5/8	#949*	20.10	RANGE OF SET 5/8-1 1 OF EACH #9140 $104.45
	5	3	3/4	#950*	22.60	
	5-1/2	3-1/2	7/8	#951*	28.80	
	6	3-3/4	1	#952*	32.95	

(*) THESE SIZES HAVE A CARBIDE TIP OF A FULL ¼ CIRCLE AROUND THE ENTIRE FORM.

TINY-TITAN BORING BARS AND BORING BAR HOLDERS

TINY TITAN BORING BARS ONLY

Min. Bore Dia.	Max. Bore Depth	Shanks	Length	C-2 Grade Carbide Model	C-2 Grade Carbide Price	High Speed Steel Model	High Speed Steel Price
.125"	5/16"	1/4"	2"	903	$ 8.85	909	$4.85
.132"	15/32"	1/4"	2"	904	10.80	910	4.85
.156"	5/8"	1/4"	2"	905	11.85	911	4.85
.187"	25/32"	1/4"	2"	906	13.85	912	4.85
.250"	1-1/32"	1/4"	2"	907	14.20	913	4.85
.312"	1-13/16"	1/4"	2"	908	17.50	914	4.85

HOLDERS ONLY — SET—5 BARS, 1 HOLDER

Size	Model	Price	Carbide Model	Carbide Price	High Speed Steel Model	High Speed Steel Price
3/8"	915	$7.00	919	$53.60	923	$38.10
1/2"	916	7.00	920	53.60	924	38.10
5/8"	917	8.00	921	54.60	925	37.10
3/4"	918	8.00	922	54.60	926	37.10

1 of each size



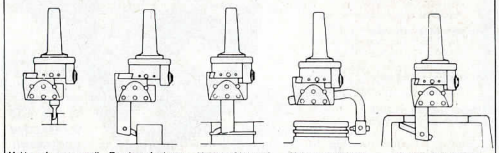
ENCO TINY-TITAN BORING BARS AND HOLDER SET

For precision small hole boring. Enco carbide and high speed steel small hole boring bars are interchangeable in holders. Holders are ground from the solid.

Enco Automatic Boring and Facing Head Gives

Automatic Facing without Stopping the Spindle For Very Little More Cost Than a Boring Head Only

Examples of Boring Operations Using AUTOMATIC FEED



1 Making of a very small diameter bore (carriage locked) Tool shaped according to requirements

2 Turning of a boss (carriage locked) Truing of top and bottom faces (Automatic feed)

3 Making of internal grooves (Automatic feed)

4 Making of external grooves (Automatic feed) Use of a special toolholder

5 Truing of an internal face (Automatic feed)

DESIGNED FOR MAXIMUM RIGIDITY

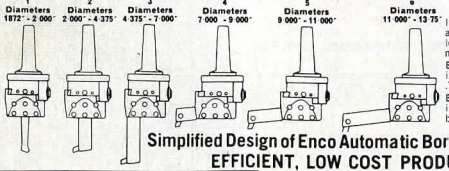
The simplicity of construction and operation provides maximum rigidity and freedom from backlash in the tool carriage, mounted on the extra large slideways.

Enco's automatic boring and facing head has a solid cylindrical body, fitted with an appropriately shaped interchangeable shank for mounting on the spindle.

A wide range of machine operations can be performed without special tooling arrangements such as boring, turning of bosses, facing surfaces, facing bosses or blind bores, inner or outer grooving as for circlips, chamfering, and similar jobs.

These heads are suitable for all milling machines such as Bridgeport, Index, Beaver, Atlantic, Cerruti, Cincinnati, Clausing, Delta, Excello, Giddings and Lewis, Gorton, Hitachi, Induma, Kondia, Milwaukee, Ribaudi, Saimp, South Bend, Tree, Rockmill, Moore, U.S. Burke and others.

Model 1200 Head Bores Any Diameter Between .200" and 13.75"



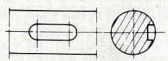
In the examples 1 to 6, the boring operations are effected with the carriage locked. For surfacing work use the automatic feed.

Example 1—Three tools have the following capacities. .20" to .47", .47" to .79", .79" to 2.00".

Examples 2 & 3—Three toolholders being supplied, choose the shortest possible to increase the rigidity.

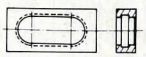
Simplified Design of Enco Automatic Boring and Facing Head Provides EFFICIENT, LOW COST PRODUCTION CAPACITY

Making a keyway



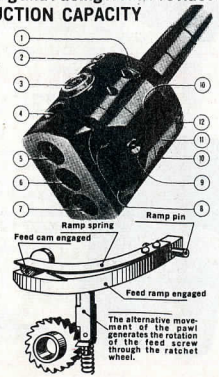
After adjusting tool to obtain correct width of keyway, carriage is locked. Vertical and longitudinal movements are used to get required depth and length.

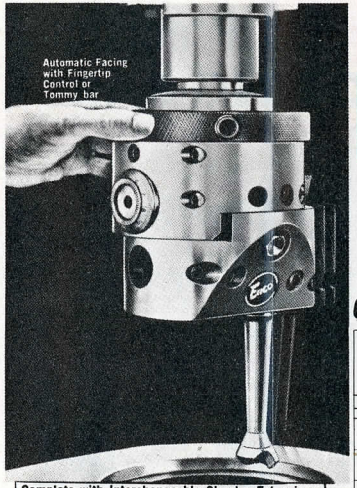
Cutting Groove and Chamfer



Use automatic movement of carriage at 1 end to engage tool up to required depth. Then lock carriage and move table to same degree as previous operation without altering initial clamping of workpiece.

1. Automatic feed knurled ring.
2. Fixed cam for automatic feed (round hole).
3. Adjustable vernier.
4. Hole for fixing boring bar.
5. Toolholder hole for small bores.
6. Toolholder hole for medium bores.
7. Toolholder hole for large bores.
8. Screw for clamping boring bar (the clamping screws for the vertical tools are on the opposite face of the carriage).
9. Lubrication point.
10. Adjusting screw for tool carriage.
11. Locking screw for tool carriage.
12. Automatic feed retractable cam (hexagon hole).



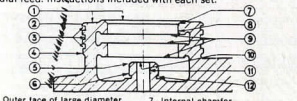


Complete with Interchangeable Shanks, Extensions and Tools in Fitted Hardwood Case



A high precision tool designed for accurate tooling and production work. All working parts are hardened and ground.

Carriage is operated manually when spindle is stopped. Automatic feed is accomplished while the spindle is turning (see photo). Automatic feed can be measured when using .0025 radial feed. Instructions included with each set.



1. Outer face of large diameter
2. Outer chamfer
3. Outer grooves for segment or circlip
4. Outside diameter
5. Internal chamfer
6. Outside diameter of a sunken boss
7. Internal chamfer
8. Large diameter bore
9. Face and undercut internal groove
10. Small diameter internal facing
11. Small diameter bore
12. Undercut groove

AMERICA'S LOWEST PRICE

NEW Enco Automatic Boring and Facing Heads

Permit Automatic Facing WITHOUT STOPPING SPINDLE

Sell for about half the cost of other boring and facing heads

PRICE For Complete Set in Fitted Hardwood Case Including choice of FREE SHANK*	#1100 HEAD $187.00 1 H.S.S.5 carbide tools, std. shank 1 extension, wrenches, case	#1200 HEAD $245.00 1 H.S.S. 4 carbide tools, standard shank, 3 extensions wrenches, case	#1300 HEAD $385.00 4 carbide tools standard shank, 3 extensions, wrenches, case
Diameter of Body	2.36"	3.54"	5.9"
Height without shank	2.75"	3.74"	4.72"
No. of feeds per rev. Automatic feed (radial) per rev.	1 .0025 / 2 .005	1 .0025" / 2 .005" / 3 .0075"	1 .0025" / 2 .005" / 3 .0075"
Radial movement for one graduation of vernier	.0005"	.0005"	.0005"
Vertical tool positions	3	3	3
Minimum capacity	0.125"	0.2"	0.4"
Maximum capacity	9¾"	13¾"	21⅝"
Maximum carriage movement (radial)	⅜"	1.2"	2.0"
+ Boring bar diameter	½"	¾"	1"

***ENCO HARDENED AND GROUND STANDARD SHANKS (One Shank FREE)**

SHANKS FOR #1100 HEAD Type	Model	Price	SHANKS FOR #1200 HEAD Type	Model	Price	SHANKS FOR #1300 HEAD Type	Model	Price
R-8	1110	$13.00	R-8	1210	$14.00	4 M.T. Draw Bar	1310	$18.00
1 M.T. Tang	1111	10.00	3 M.T. Tang	1211	12.00	4 M.T. Tang	1316	18.00
2 M.T. Draw Bar	1112	12.50	3 M.T. Draw Bar	1212	14.00	5 M.T. Draw Bar	1311	25.00
3 M.T. Tang	1113	10.50	4 M.T. Tang	1213	12.50	5 M.T. Tang	1317	25.00
3 M.T. Draw Bar	1114	13.00	4 M.T. Draw Bar	1214	14.50	6 M.T. Draw Bar	1312	32.00
4 M.T. Tang	1120	12.50	5 M.T. Tang	1215	17.00	6 M.T. Tang	1318	32.00
30 Std.	1115	18.00	5 M.T. Draw Bar	1216	20.00	40 Std.	1313	25.00
40 Std.	1116	22.00	30 Std.	1217	20.00	50 Std.	1314	36.00
9 B & S	1117	13.00	40 Std.	1218	23.00	1½" Straight	1315	28.00
¾ Straight	1118	10.00	50 Std.	1219	34.00	Special shanks including Quick change shanks available. When ordering, send specifications.		
Moore	1119	22.00	9 B & S	1220	14.00			
			Moore	1221	23.00			
			1" Straight	1222	15.00			
			¾" Straight	1224	15.00			

Fast Delivery!

Try One Now at Our Risk SATISFACTION GUARANTEED OR MONEY BACK

SEND FOR FREE

Enco FULL SIZE 8½x11" 48 Page Catalog & Price List